

Annual AVMA Meeting
Detroit, Michigan
August 20-24, 1961

Journal

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

Renal Osteodystrophy in the Dog

THE CLINICAL, radiologic, laboratory, and necropsy findings are described in 4 dogs with renal osteodystrophy. Page 329

Growth of SPF Pigs

A TOTAL of 1,726 crossbred SPF pigs from 172 litters were considered in this study of the influence of management on the growth of SPF pigs. Page 342

Vaginal Prolapse in Cattle

VARIOUS surgical procedures are described for correction of vaginal prolapses in cattle. Page 352

The Executioner-Veterinarian

A REVIEW of one of the early books on veterinary medicine—when the veterinarian was also the public executioner. Page 359



Vol. 139

August 1, 1961

No. 3

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Journal

OF THE
AMERICAN VETERINARY
MEDICAL ASSOCIATION

Vol. 139 No. 3 August 1, 1961

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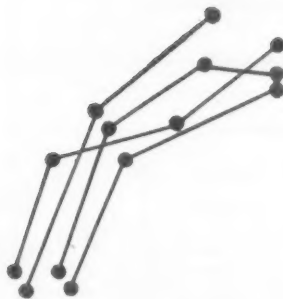
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References: 1. York, C. J.; Bittle, J. L.; Burch, G. R., and Jones, D. E.; Vet. Med. 55:30 (April) 1960. 2. York, C. J., and Burch, G. R.; J. Am. Vet. M. A. 138:298 (March 15) 1961.

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Correspondence

Still Another Point of View

June 18, 1961

Dear Sir:

I have read with interest your editorial of April 15 and heartily agree with your position on the training of veterinary technologists. As we in the large animal field know, untrained personnel whether they be farmers, "agricultural experts," government employees, or representatives of drug and feed companies, are doing more and more of the veterinary tasks on the farm.

As I see it, the remedy does not lie in the training of veterinary technologists; rather, we need realistic action by individual veterinarians and their associations to adjust fees to a realistic level, organize more firmly to protect their rights, effectively influence legislation, and take a firm stand at the local level.

I also feel that too often veterinarians in fields other than general practice do not understand these problems and unintentionally act contrary to the interests of the profession. Often such veterinarians have more influence because of fewer demands on their time, highly regarded positions, and better financial status, and thus become spokesmen for the profession.

Therefore, I appreciate your stand on this matter of technologists and hope that appropriate measures will be taken at all levels to tighten our ranks in order that our position in service to the community and the animal kingdom will be preserved and strengthened.

S/R. G. SCHNEIDHORST, JR., D.V.M.
Huntsville, Ohio

Public Health Brief

Sixteen of the 23 cases of anthrax in man reported during 1960 occurred in South Carolina and were related to the processing of imported goat hair. These were the first cases in that state. The other 7 cases occurred in 6 states.

The number of cases of brucellosis in man in the United States was about the same in both 1959 and 1960. About 42% of the brucellosis cases were reported from Iowa alone. —*Morbid. and Mortal. Rep. U.S. Pub. Health Serv. (Jan. 6, 1961): 2.*

ITEMS

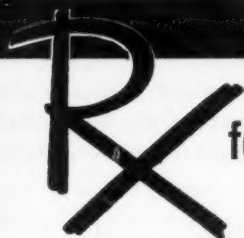
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the role of the steroids in veterinary medicine

Part I—The Adrenal Corticoids

The corticoids secreted by the adrenal cortex are of two general types: (1) The anti-inflammatory group, of which cortisone and hydrocortisone are primary examples; and (2) the mineralocorticoids, exemplified by aldosterone and desoxycorticosterone. The second group has limited veterinary importance at present, and will not be discussed here.

The anti-inflammatory steroids

This group is frequently referred to as the 11-oxysteroids or the glucocorticoids. The latter term reflects the important effect of these steroids on carbohydrate metabolism. In addition to cortisone and hydrocortisone (often called Compounds E and F), the group includes prednisone, prednisolone, fluorohydrocortisone, methylprednisolone, dexamethasone, triamcinolone, prednisolone trimethylacetate, and paramethasone.

Clinical uses of the glucocorticoids

The anti-inflammatory steroids have a wide variety of clinical applications. In nearly all instances, their favorable effect results from supplying the animal with hormone in excess of physiological levels. Addison's disease, in which adrenal cortical function is permanently reduced or lost, is recognized only rarely in animals. Under certain conditions of extreme stress (e.g., major surgery, prolonged exposure to heat or cold, etc.), the adrenal cortex may become exhausted and hormones would then be used for replacement therapy.

In general, all of the anti-inflammatory steroids are qualitatively similar in their actions and can be used interchangeably for many diseases. They do differ markedly in a quantitative way (in terms of potency) and in their relative tendency to produce undesirable side effects.

Major indications for the glucocorticoids

1. Diseases of the joints, bursae and tendons—

Most clinical reports on the use of steroids for these diseases refer to their anti-inflammatory efficacy in horses, dogs and cattle, although, presumably, they would be effective in any species. In osteoid arthritis, the steroids are extremely useful in causing a remission of clinical signs. Since they have no permanent curative effect in arthritis, treatment is usually required on a continuing basis. In horses and cattle, intra-articular, intrabursal or intramuscular injections are the preferred routes of administration. In dogs, any one of these routes may be used, although oral therapy is usually more practical.

2. Bovine ketosis—Intramuscular administration of therapeutic doses of glucocorticoids usually results in rapid rise in blood sugar associated with a decrease in blood ketones and a remission of clinical signs.

3. Skin diseases—In dogs and cats, local and/or systemic use of these steroids in acute dermatoses (whether due to local irritants, allergy, or other inflammatory agents) usually results in a rapid disappearance of redness, swelling, and pruritus when present. In otitis externa, steroids reduce swelling which interferes with proper examination and cleansing of the ear and which prevents penetration of antibiotics or other drugs. Steroids are also valuable for treating skin inflammations in other species, but their use in these areas is seldom reported. In horses, local application of a glucocorticoid is often helpful in reducing exuberant granulation tissue (e.g., "proud flesh") following leg wounds.

4. *Inflammations of the eye*—Local application of steroids is particularly useful where marked swelling interferes with examination of the eye, or where pain or discomfort may lead the animal to self-inflicted mechanical injury of the affected eye.

5. *Adrenocortical insufficiency*—In the relatively rare instances where temporary exhaustion of the gland and/or an increased demand of tissues for cortical hormone may occur, particularly after major surgery or in similar severe stress situations, the use of glucocorticoids would appear to be a rational, and perhaps a lifesaving, therapy. Intravenous injection of one of the soluble forms (e.g., hydrocortisone hemisuccinate) is indicated in acute cases.

6. *Miscellaneous diseases*—The anti-inflammatory steroids have been used occasionally in a variety of other diseases, including: malignancies (mast cell sarcoma, lymphosarcoma) in dogs, where they may achieve temporary remissions; eosinophilic myositis, bronchial asthma, postvaccinal (rabies) paralysis, and disc syndrome in dogs; laminitis in horses; and mastitis in cows. In the latter instance, the steroids are used in conjunction with appropriate antibacterial agents.

Note: Withdrawal of glucocorticoids following prolonged therapy should be undertaken gradually to permit the anterior pituitary-adrenal cortex axis to regain normal function, thus preventing a possible period of lowered body resistance in the animal.

The major physiologic actions of the glucocorticoids

1. *Anti-inflammatory*—the basis for the widespread use of steroids for such diseases as arthritis, bursitis, dermatitis, and inflammation of the eye.

2. *Gluconeogenesis*—production of glucose from noncarbohydrate sources (usually through the conversion of protein to carbohydrate).

3. *Retention of water and sodium, and secretion of potassium*—High doses or prolonged therapy can lead to edema and hypopotassemia; but these side effects are seldom observed in steroid therapy of animals. In fact, dogs often exhibit the opposite phenomena, and many develop some degree of polydipsia or polyuria during treatment. Therapy can generally be continued in these cases, although an attempt should be made to adjust the dosage so as to minimize the problem.

4. *Eosinopenia, lymphopenia and neutrophilia*—Circulating eosinophils may disappear from the blood stream and lead to very low levels of circulating lymphocytes. On the other hand, the rise in numbers of neutrophils may increase total white blood cells.

5. *Involution of lymphoid tissue*—reversible atrophy of lymph nodes.

6. *Inhibition of corticotropin (ACTH) secretion*—Repeated doses of glucocorticoids reduce ACTH secretion by the anterior pituitary with subsequent atrophy of the adrenal cortex. This action is reversible.

7. *Decreased milk production*—a reversible reaction by cattle (and possibly other animals) to repeated steroid therapy.

8. *Other effects*—In dogs: development of soft or loose stools, panting type of breathing, and mild to moderate depression are seen occasionally; in horses: depression has been reported in a few cases.

This is the first in a series of Syntex reports on the role of steroids in veterinary medicine. We hope it will serve as an introduction to Syntex, whose original research and major technological advances during the past decade have led to the discovery and refinement of many widely used steroids.

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LEGISLATION

Social Security Amendments

H.R. 6027—Social Security Amendments of 1961 cleared for the President; some of major changes will increase minimum benefits from present \$33.00 to \$40.00, increase widows' benefits by 10%, liberalize the insured status requirement, provide an actuarially reduced benefit for men at age 62, and increase tax rate 1/8 of 1% on employer-employee and self-employed. The measure will increase benefits for 4.4 million people.

Free Importation of Wild Animals

H.R. 7678—Passed by the House; amends Tariff Act of 1930 to provide free importation of wild animals and birds intended for exhibition in the United States, whether to be used by importer or sold by him for this purpose.

Development of Library Facilities

S. 464—Cleared for House action; to grant consent of Congress to interstate compacts for development and operation of library facilities and services.

COMMITTEE REPORTS ON BILLS

Drug Industry Prices

Kefauver Subcommittee on Anti-Trust and Monopoly, Committee on Judiciary—Senate Report No. 448, a study of administered prices in the drug industry (S. Res. 52).

Resident Travelers' Duty-Free Allowance

Senate Finance Committee—H.R. 6611 favorably reported; reduces from \$500.00 to \$100.00 the duty-free allowance permitted returning resident travelers, excepting a \$200.00 maximum for goods from the Virgin Islands.

Mutual Educational and Cultural Exchange Act

Senate Foreign Relations Committee—S. 1154 reported favorably, June 14; provides for Mutual Educational and Cultural Exchange Act of 1961 with amendments (S. Report No. 372). Senate began consideration and debate of measure June 27 but returned to calendar when other legislation was taken up. May resume consideration of bill.

Review of National Science Foundation

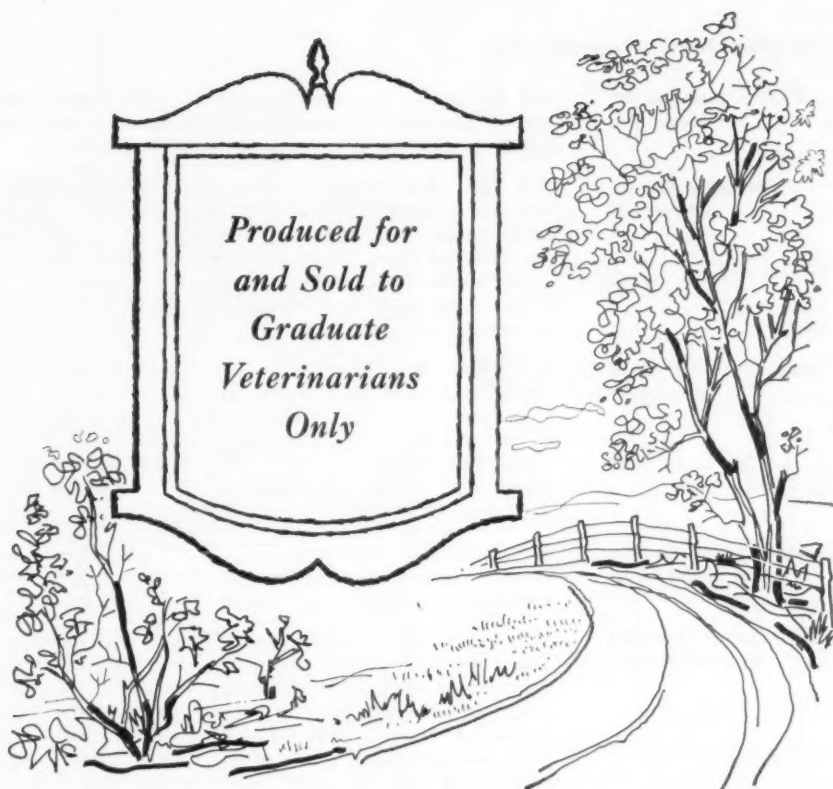
House Committee on Science and Astronautics—House Report No. 670, Annual Review of the National Science Foundation.

NEW BILLS

Agricultural Aid to Guam

S. 2121, Sen. Ellender (by request)—To establish federal agricultural services to Guam.

Continued on page 302



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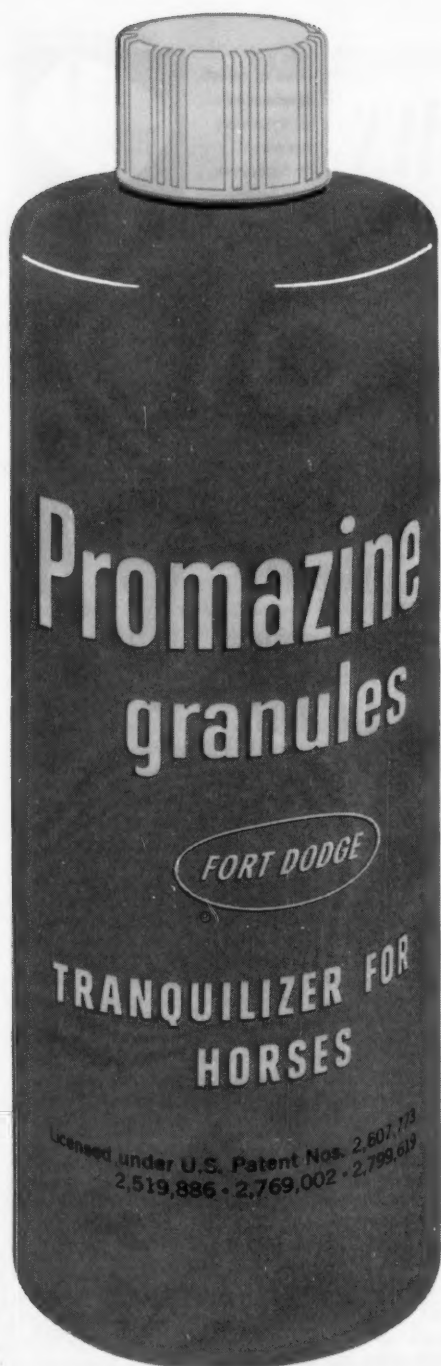
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Washington News—continued

- | | |
|--|---|
| Poultry Inspection Act
in Puerto Rico | H.R. 7866, Mr. Fernos-Isern, Resident Commissioner, Puerto Rico—To amend the Poultry Inspection Act to extend application thereof to the Commonwealth of Puerto Rico. |
| Meat Inspection Act
Amendment | H.R. 7871, Rep. Smith (D., Iowa)—To extend Meat Inspection Act coverage to meat and meat products slaughtered or prepared in establishments subject to the jurisdiction of the National Labor Relations Board. In effect, bill would make the Meat Inspection Act applicable to meat and meat products produced and shipped intra-state, if N.L.R.B. has jurisdiction over labor disputes. |
| Congressional Review of
Grants-In-Aid | H.R. 7802, Rep. Fountain (D., N. Car.)—To provide for periodic Congressional review of federal grants-in-aid to state and local units of government. Identical bills introduced are: H.R. 7803, Rep. (Mrs.) Dwyer (R., N. J.); H.R. 7804, Rep. Ikard (D., Texas); H.R. 7805, Rep. Smith (D., Iowa); H.R. 7808, Rep. Curtis (R., Mo.); and H.R. 7814, Rep. Pelly (R., Wash.). |
| Scholarships for Members
of Armed Forces | H.R. 7727, Rep. Vinson (D., Ga.)—To amend Title 10, U.S. Code, to permit members of the Armed Forces to accept fellowships, scholarships, or grants. |
| Regulation of Commerce
in Dairy Products | H.R. 7729, Rep. Westland (R., Wash.)—To provide an adequate, balanced, and orderly flow of milk and dairy products in interstate and foreign commerce, to stabilize prices of these products, to impose a stabilization fee on marketing of milk and butterfat, and to include other aims. Measure would provide for a Federal Dairy Stabilization Board with 15 members, to be created within the USDA. Eligibility for membership on the board would be limited to milk producers, and officers or full-time employees of dairy cooperative associations and marketing agencies of these associations, meeting the requirements of the Copper-Volstead Act. |
| National Science Foundation
Amendment | H.R. 7806, Rep. Brooks (D., La.)—To amend National Science Foundation Act of 1950 by providing additional criteria for selection of persons for scholarships and fellowships, and requiring additional information on the affidavit filed by each applicant. |
| Promotion of Air Force
Officers | H.R. 7809, Rep. Kilday (D., Texas)—To improve the active duty promotion opportunity of Air Force officers from the grade of major to that of lieutenant colonel (committee hearings held—House Report No. 585). |
| National Foreign
Service Academy | S. 2054, Sen. Gore (D., Tenn.)—To promote good foreign relations by providing for establishment of a National Foreign Service Academy. |
| Training and Recruitment
Program for Leadership | H.R. 7604, Rep. Barry (R., N. Y.) (by request)—To establish a program to recruit ablest citizens qualified to become leaders in their fields, and to increase their usefulness by preparatory education and training for service to American government, science, education, commerce, and culture. |



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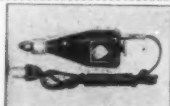
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1. Raker, C. W., and English, B. *J.A.F.M.A.*, 134:23 (1959).
2. Stucki, B. *Western Vet.*, 5:15 (1958).
3. Stewes, A. R. *Mod. Vet. Prac.*, 40:45 (1959).
4. Brown, C. W. *ibid.*, 40:47 (1959).

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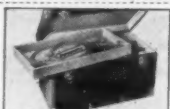
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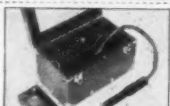
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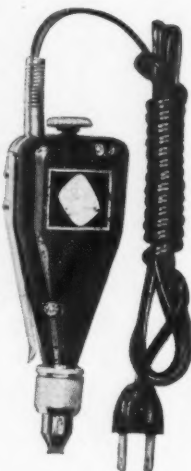


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"Collie Nose"
symptoms
in a hurry



Solar dermatitis, primarily known as "Collie Nose", can be a real problem to treat with lasting results.

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AVMA Resolution May Upgrade USDA Veterinarians

Included in President Kennedy's amendments to the USDA budget for fiscal 1962 are 2 revised budget estimates which will favorably affect veterinary positions in the USDA.

The amendments provide for increased costs resulting from a reclassification of positions by the Civil Service Commission in the Agricultural Research Service and the Agricultural Marketing Service. The 2 revised budget estimates were passed by the House of Representatives June 2. Passage by the Senate seems assured.

The revisions for the Agricultural Research Service would provide for increased costs of \$760,000 resulting from the reclassification of veterinary positions in plant and animal disease and pest control and in meat inspection.

The revisions for the Agricultural Marketing Service provide an additional \$500,000 for the increased costs of the reclassification of veterinarians engaged in poultry inspection.

If the revised budget is adopted, AVMA anticipates that most veterinary assignments requiring independent judgment, which are currently GS-9 level, will be upgraded to GS-11.

The revised standards will be issued by the Civil Service Commission about July 1, 1961, and will be mandatory under the Classification Act of 1949, as amended.

All of this activity was spurred by a resolution adopted by AVMA's House of Delegates last year in Denver. The resolution directed AVMA to request the U.S. Civil Service Commission to conduct a complete study and survey of veterinary positions in the USDA and other agencies in the federal government.

A copy of this resolution was transmitted to the chairman of the Civil Service Commission, the chairman of the Senate Committee on Post Office and Civil Service, the chairman of the House Committee on Post Office and Civil Service, and to other appropriate government officials.

Since that time, AVMA has kept a watchful eye on the activities in Washington. On May 24, Dr. H. E. Kingman, Jr., AVMA's executive secretary, requested the U.S. House of Representatives to appropriate to the USDA the full amount of the revised estimates for fiscal 1962 in accordance with the President's amendments, specifically the amendments which provide for increased costs resulting from a reclassification of positions by the Civil Service Commission in the Agricultural Research Service and the Agricultural Marketing Service.

Dr. Kingman made the request in a letter to Rep. L. Whitten (D, Miss.), chairman of the Agriculture Subcommittee on Appropriation.

The amendments have been passed by the House, but still require Senate approval.

Oxygen Therapy Demonstrated



Oxygen therapy, used for calves with pneumonia or not breathing properly at birth, was demonstrated at a clinic held recently at the University of Illinois College of Veterinary Medicine. Oxygen is being administered through nose tubes held by Dr. Charles Lindley. The animal is held down by (left to right): Dr. L. E. Boley; Max Lang, a graduating senior; and Dr. John Lykins.

Chicago's Continuing Education Program

In an effort to meet the growing demand for continuing education in veterinary medicine, the Chicago Veterinary Medical Association developed a program that can be used in almost any section of the country.

When the Chicago association first appointed a committee to investigate the possibilities of holding continuing education programs in 1956, the committee had to do some pioneering. A recent report by the AVMA Council on Education revealed that 13 local associations are now carrying on continuing education programs of veterinary education.

The Chicago association's educational committee spent 2 years making a survey of association membership to determine whether there was an interest in continuing education. Of 160 members surveyed, over 1/3 replied. All of the respondents indicated they would be interested in continuing education.

The questionnaire was designed not only to determine whether interest existed, but also to appraise the nature of that interest.

In the process of gathering information, the committee learned first hand how veterinarians felt about continuing education. There was a marked awareness of the many advances in all phases of veterinary medicine and a strong desire to keep up with these changes. Like the doctor of medicine, the veterinarian is aware that the rapid progress of medicine requires a systematic and disciplined program of study.

While the personal concern to be a better veterinarian was foremost, a marked concern for the profession as a whole was also shown. Many veterinarians who wrote to the committee or spoke to committee members pointed out that no comparable profession felt it could maintain the highest professional standards of excellence without an adequate continuing education program.

Since no one had to be convinced or sold, the task of the committee was simply to discover what the veterinarians wished to study. Over half of the replies indicated an interest in surgery. Laboratory procedures and clinical diagnosis were next in line of preference. Other frequently mentioned interests were eye diseases, internal medicine, and radiology. Interest was expressed in 13

other areas ranging from nutrition to pathology.

The questionnaire showed that the major obstacle to a continuing education program was the inability of veterinarians to get away from their practices.

It was decided to offer, in the spring of 1958, 3 courses to be conducted in Chicago, one afternoon a week over a 10-week period. The courses were in general surgery, radiology in veterinary medicine, and clinical pathology.

An arrangement had been made with the Cook County Graduate School of Medicine, and the first program was held in their building with their faculty members as instructors. The advantages in tying in with a local medical school are obvious.

If laboratory work is involved, it is almost mandatory that an institution be available with complete facilities. Obviously the school will command greater respect and consequently greater support than the same program operated solely by the local association.

The first course by the Chicago association was successful both in size and in quality. The experience did show, however, that it would be better if the courses were given by practicing veterinarians, because of the special needs and problems of veterinarians. Experience also showed that a 10-week program limited attendance to veterinarians living close to the school.

We decided to offer future programs in 3 or 4 full days. It was found that men from a distance preferred to take time away from their work over a short period rather than tie up time over a 2½-month interval to attend one-day sessions. The committee decided to have two 3- or 4-day sessions each year, with qualified teachers from the field of veterinary medicine.

Finding qualified teachers was a problem. The committee found it necessary to draw men from almost every section of the country. It is expected that as the various programs for continuing education increase in size and number, they will stimulate an interest in such study and eventually provide the leadership that is needed.

The Chicago association has been fortunate in securing such men and women as Dr. Frank Kral (VI '14), who gave a

course in veterinary dermatology; Dr. W. G. Magrane (MSU '40), in canine ophthalmology; Dr. Jean Holzworth (COR '50), in feline diseases; Dr. John F. McGrath (UP '43), in veterinary neurology; and Dr. Jacques Jenny (ZUR '42), who will give a course in orthopedic surgery for the school this fall.

In arranging for the lecturers, a great number of details have to be worked out. Most of the lecturers find it helpful if the committee is explicit about what is expected of them.

There are a number of little things that can help contribute toward a successful course. If notes on the lecturer's course can be supplied, they are an advantage to the students. They can concentrate better on his words if they do not have to take notes. Slides are always helpful and a wet clinic is advantageous. Here again, it helps to have a tie-in with a local medical institution since they can supply the animals, laboratory, and all the material that is necessary. The committee has to check all along the line to make certain that a projectionist is available, as well as micro-

scopes and other equipment the visiting lecturer has indicated he will need for his course.

The cost of such a program has presented no problem. From the beginning, the program of the Chicago association has been self-supporting. In fact, there usually has been a balance at the end of each course which was used for the regular work of the association.

The rewards to the association are many. In general, it has stimulated interest in the work of our association and made the relationship between members more meaningful and stimulating.

The committee cannot feel that it has discharged its duty. It will be kept active as it attempts to meet the increased demand for more and different types of continuing education courses. The future may dictate some new approaches, but for the present we feel we can meet the needs of our membership within the framework of our program.

S/DR. LEON G. SCHWARTZ, *chairman*
Education Committee
Chicago V.M.A.

Ohio State Plans Continuing Education Series

An extensive series of conferences, workshops, and short courses have been planned for the next 12 months as part of the expanded continuing education program of the Ohio State University, College of Veterinary Medicine.

The year-long series of meetings has been set up to provide practicing veterinarians with the latest information on developments in veterinary medicine.

The continuing education program began June 14, 1961, with the opening of the 30th annual Conference for Veterinarians.

The program will include 4 veterinary public health conferences co-sponsored by the college and the Ohio Department of Health. These sessions, which will deal with current problems relating to public health activities, are scheduled for Sept. 29, 1961, Dec. 8, 1961, March 9, 1962, and June 1, 1962.

Six workshop programs, varying in length from 1 to 3 days have also been planned. They will be held Sept. 12-13, 1961, on basic

veterinary hematology; Nov. 29-30, 1961, on bovine mastitis; Dec. 29, 1961, on sedation, tranquilization, and general anesthesia of horses; March 14, 1962, on techniques of bovine regional anesthesia; March 21, 1962, on infectious dermatitis of dogs and cats; and March 21-23, 1962, on small animal orthopedics.

Also planned as part of the continuing education program are 5 short courses. They will be Dec. 18, 1961, on newer developments in clinical pharmacology; March 8, 1962, on health promotion programming for the dairy herd; March 12-16, 1962, on health promotion programming for the swine herd; March 19-21, 1962, on diagnostic veterinary radiography; and June 6, 1962, on radiographic diagnosis of bone disease.

Additional information concerning the program is available from the Director of Continuing Education, College of Veterinary Medicine, 1900 Coffey Rd., Columbus 10, Ohio.

Dr. H. C. Berger Honored

Dr. Herbet C. Berger (CIN '17) was honored at the annual Honor Awards Ceremony of the USDA in Washington, D.C., on May 23, 1961.



Dr. H. C. Berger (right) is congratulated by the Hon. Orville L. Freeman on completing 50 years of federal service.

Dr. Berger was the only recipient of an award in recognition of 50 years of federal service with the department. He was awarded a certificate and pin and received the personal congratulations of the Hon. Orville L. Freeman, Secretary of Agriculture.

Dr. Berger completed his 50 years of service on April 14, 1961. He entered the service on April 15, 1911, as an assistant observer in the Weather Bureau which at that time was under the Department of Agriculture. On June 11, 1917, he was named as a veterinary meat inspector with the Bureau of Animal Industry at Jackson, Miss.

Through the years Dr. Berger held various assignments throughout the United States and at the time of his retirement he was the inspector in charge of the Opelousas, La., station of the Meat Inspection Division.

NSF Fellowship Applications Being Accepted

Applications are now being accepted in 2 National Science Foundation graduate-level fellowship programs—the Cooperative Grad-

uate Fellowships, for the academic year 1962-1963, and the Summer Fellowships for Graduate Teaching Assistants, for the summer of 1962.

Applications for Cooperative Graduate Fellowships must be received by the participating institutions by Nov. 1, 1961; applications for Summer Fellowships, by Dec. 8, 1961.

The 2 fellowship programs are administered cooperatively by the National Science Foundation and institutions of higher education in the United States which confer doctoral-level degrees in mathematics, engineering, and the sciences. A total of 165 institutions participate in the Cooperative Graduate Fellowship program and all but 6 of these participate in the program of Summer Fellowships for Graduate Teaching Assistants.

In both programs, students apply through the participating institutions for initial evaluation by local faculty committees, and all applications are then forwarded to NSF. Panels of scientist-scholars appointed by the National Academy of Sciences-National Research Council perform final evaluation. Ability is the sole criterion for making judgments.

A Cooperative Graduate Fellow receives a stipend of \$2,400 for a full year's tenure or \$1,800 for the academic year. His institution may augment this basic stipend by as much as \$1,000 for 12 months or \$750 for 9 months. A Summer Fellow in the Graduate Teaching Assistant program receives a stipend ranging between \$50 and \$75 per week; the exact amount is determined by his institution.

Application materials can be obtained from the graduate dean of any participating institution or from the Fellowships Section, Division of Scientific Personnel and Education, National Science Foundation, Washington 25, D.C.

Sessions on Breeding Soundness of Bulls Held

The Society for the Study of Breeding Soundness of Bulls has recently staged 2 sessions—one in Florida and one in Texas—on the evaluation of bulls for breeding soundness.

The Florida session was held at the Diagnostic Laboratory, Kissimmee, Fla., May 28,

1961, under the auspices of the Committee for Continuing Education of the Florida V.M.A. Dr. E. J. Carroll (COL '57), Colorado State University, presented a full-day program to 35 veterinarians from Florida, Georgia, and Pennsylvania.

Dr. Carroll also presented the program at the Veterinary Hospital in College Station, Texas, May 31, for 45 veterinarians from Texas and Louisiana. This program was sponsored by the Texas V.M.A.

Both groups are interested in promoting the practice of examining bulls for breeding soundness by qualified veterinarians familiar with standardized criteria. This practice is popular with many beef producers, and the veterinarians who attended the sessions feel that it is the obligation of the veterinary profession to offer the service. They feel that practitioners need to be informed on criteria affecting reproduction, such as venereal diseases, nutrition, and herd management.

The Society for the Study of Breeding Soundness of Bulls plans similar programs for the future.

Iowa V.M.A. Approves Consultative Veterinary Services

Contract veterinary medical services were authorized conditionally by the Executive Board of the Iowa V.M.A. at a meeting May 6, 1961.

The board gave its authorization after hearing a report from the association's Committee on Contract Services, but made its approval contingent on the following conditions:

1) The name of such activities shall be changed from contract to consultative veterinary services.

2) The practice of preventive veterinary medicine shall be the purpose of the service.

3) Basic principles of ethics of the profession shall be observed—no advertising or solicitation shall be allowed.

4) The fee for the mechanical or the immunizing phase, or both, of this service set forth by an individual shall be in accordance with and acceptable to neighboring veterinarians.

5) Consultative and management phases shall be considered in establishing a fee.

6) Conditions of a catastrophic nature shall not at any time be included in any agreement.

7) Oral agreements with clients shall be made rather than written contracts.

Veterinarian Named to Cornell Board

Dr. Bruce W. Widger (COR '51), Marcellus, N.Y., has been named to serve on the board of Trustees of Cornell University for one year.

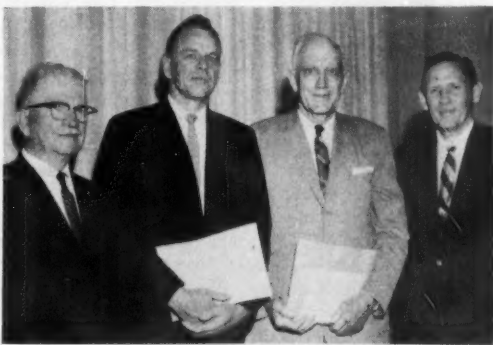
Dr. Widger was appointed by the New York State Grange, which by University charter is entitled to name one member of the Board. He is in general practice in Marcellus.

Dr. Widger is a past-master of Marcellus Grange and a member of its executive board. He is also vice-president of the Onondaga V.M.A.

KSU Presents Distinguished Service Awards

A highlight of the 23rd annual conference for Kansas veterinarians at Kansas State University June 11-13 was the presentation of Distinguished Service Awards to 2 Kansas veterinarians.

The awards were presented to Dr. Forrest L. Hart (KCV '18), who has maintained a general practice in Hiawatha for more than



Shown after the awarding of the 1961 Distinguished Service Awards at Kansas State University are (left to right)—Drs. E. E. Leasure, dean of the KSU College of Veterinary Medicine; J. F. Knappenberger; F. L. Hart; and James A. McCain, president of KSU.

40 years, and Dr. Joseph F. Knappenberger (KSU '35), who is president of Haver-Lockhart Laboratories. The awards were presented by Dr. J. A. McCain, president of Kansas State University.

Dr. Hart is a past-vice-president of the AVMA and past-president of the Kansas V.M.A. He was named Kansas Veterinarian of the Year in 1958. He has also been a member of the Kansas Livestock Sanitary Commission and the Kansas Veterinary Examining Board.

Dr. Knappenberger is a past-president of the Kansas V.M.A., the Kansas City V.M.A., and the Kansas State University Veterinary Alumni Association. He is currently vice-president of the Kansas State University Alumni Association.

The honors were presented to the veterinarians at the conference banquet, June 12.

Animal Care Panel Forms Capital Branch

The Animal Care Panel has recently formed a National Capital Area Branch to assist in the solution of problems involved in the production and care of 8,000,000 animals used annually for scientific research in the Washington, D.C., Virginia, and Maryland area.



Dr. C. G. Durbin

Officers of the new branch are: Drs. Charles G. Durbin (UP '49), U.S. Food and Drug Administration, president; William I. Gray (COR '50), National Institutes of Health, vice-president; John G. Keller, Hazleton Laboratories, secretary-treasurer; and Mr. Berton F. Hill, National Research Council, national representative.

The first meeting of the branch was held on June 20, 1961, at the Dart Auditorium of the Armed Forces Institute of Pathology. Dr. Dale Lindsay, chief, Division of Research Grants, National Institutes of Health, discussed "The Role of the Animal Care Panel in Medical Research."

The aim of the Animal Care Panel is the production of high quality animals for research purposes. It accomplishes this by holding educational seminars and training

programs for animal caretakers, producing publications in the field, coordinating efforts of those interested in animal care, and conducting a national meeting annually. Its membership includes veterinarians, medical investigators, animal supervisors, caretakers, technicians, animal suppliers, and feed and cage manufacturers.

Nutritional Pathology Training Program Established at Auburn

A postgraduate program in nutritional pathology has been established at Auburn University.

The program, which will provide training in nutrition, biochemistry, and pathology, will be directed by Dr. Paul M. Newberne (AUB '50). Dr. Newberne believes this will be the only program of its kind in the country. It will be conducted within the Department of Animal Sciences.

Four students working toward the M.S. or Ph.D. degrees can be accommodated in the program at one time. Students selected for the program will be supported by National Institutes of Health grants. Research grants will provide the work for the training program.

Training obtained under this program will be accepted as partial fulfillment of requirements for taking the examination of the American College of Veterinary Pathologists.

Dr. J. Schnautz Returns from Peru

Dr. John Schnautz (UP '41) is leaving Peru where he was veterinary advisor with the International Cooperation Administration. He will have no successor.

As a result of his efforts and those of the government of Peru, the country now has many trained veterinarians and a top-ranking school for training others. The great shortage of meat that necessitated importing thousands of tons a year now has been reduced.

First, the quality of meat produced in Peru was improved through a program started just before Dr. Schnautz arrived. The average weight of beef animals was increased from 350 to 500 lb. This improved

both the quality and the quantity. Then the advantages of slaughtering animals 1½ to 2 years of age, instead of 3½ to 6 years, were demonstrated as a means of increasing quantity and improving quality.

The ICA helped to build several slaughterhouses and aided local governments in the construction of 20. A veterinary building, which will be 2 years old in September, has been built as part of San Marcos University in Lima and is staffed with an able faculty. Technicians from the United States will be called on in the future for special projects only.

Dr. Schnautz received his M.S. degree from Oregon State College in 1945. He was on the staff of that school for 17 years. He spent 2 years in Honduras with the ICA before going to Peru.

After taking a vacation, Dr. Schnautz will report to Thailand for his next ICA assignment. Mrs. Schnautz, who was in Peru with her husband and 5 children, served as an ICA advisor in home economics. She returned with her husband and hopes to resume work in her field.

USDA Veterinarians Honored for Service

The Meat Inspection Division of the USDA recently honored 3 veterinarians on their completion of 40 years of service.

They were: Drs. Allen J. Hauck (CIN '20), Herbert W. Knoernschild (MCK '14), and Arthur E. Slocum (COL '20). They each received a certificate signed by the Hon. Orville L. Freeman, Secretary of Agriculture, and a lapel pin. Formal presentations were made at ceremonies conducted by the inspectors in charge at their stations.

Decline in Rabies Cited in South

A general decline in rabies in Alabama, Georgia, and Florida was reported at the 7th Tri-State Rabies Meeting, June 1, 1961, at the Georgia Department of Public Health, Atlanta, Ga.

Organizations represented at the meeting were the state and local health departments, U.S. Fish and Wildlife Service, the Army

and Air Force, and U.S. Public Health Service.

While a general decline has been shown, participants in the meeting were reminded that rabies is still found in foxes and raccoons and that there are still pockets of dog rabies in the 3-state area.

The Tri-State Rabies Meetings were set up to bring about close cooperation between the agencies involved with rabies control and to provide a means for informal exchange of research information.

The meetings were initiated in 1955 under the joint sponsorship of the state health departments and the U.S. Public Health Service's Communicable Diseases Center.

Foreign Veterinarians Visit Oregon State University

Veterinarians—one from Turkey, the other from New Zealand—recently visited Oregon State University for briefings on research programs and conferences with the school's faculty.

One of the visitors was a woman, Dr. Kamuran Erturk, of the University of Ankara, Turkey. She will be at Oregon State University for about a year working with Dr. O. M. Muth (MSU '29) on white muscle disease and animal nutrition problems.

Dr. Erturk is in the Department of Biological Chemistry at the University of



Visitors from Turkey and New Zealand to Oregon State University are shown with Dr. O. M. Muth (second from right). They are (left to right): Ferruh Erturk (Dr. Erturk's son), Dr. Kamuran Erturk, Dr. Muth, and Dr. David C. Dodd.

Ankara. Her husband is also a veterinary professor at the school.

The other visitor was Dr. David C. Dodd, veterinary pathologist at a governmental animal research station, Hamilton, New Zealand.

Dr. Dodd has been doing advanced work at Washington State University since last June. He is visiting various leading research centers to observe the research being done with sheep, cattle, and swine. He is scheduled to spend a year at the Armed Forces Institute of Pathology in Washington, D.C., beginning in July.

Dr. D. E. DeTray Receives New Appointment

Dr. Donald E. DeTray (OSU '40) has been appointed assistant to the director of the Animal Disease and Parasite Research Division, ARS, USDA, for Research on Diseases and Parasites of Swine.



Dr. D. E. DeTray

Dr. DeTray joined USDA in 1947 and was a member of a team of scientists working on foot-and-mouth disease vaccine production in Mexico. Following his assignment in Mexico, he worked for several years on brucellosis research at the Animal Disease Station at Beltsville, Md.

In 1951 Dr. DeTray was a member of the ADP Research Division staff at the Kabete Veterinary Laboratory in Kenya, East Africa, where for 2 years he conducted research studies on rinderpest and other foreign animal diseases. He returned to Kabete in 1954 as veterinarian in charge of the cooperative research project with the East African High Commission on African swine fever.

During his stay in Kabete, Kenya, and later at the laboratory of the East African Veterinary Research Organization at Muguga in Kenya, his research studies of African swine fever provided much needed information on the disease. On his return trip to the United States this year, Dr.

DeTray participated in an FAO/OIE Emergency Meeting on African swine fever and African horse-sickness in Paris.

Auburn University Receives NIH Grant

A research grant of \$23,111 has been awarded to Auburn University by the National Institutes of Health.

The grant will support a 2-year study on the mechanism of immunity against the tapeworm *Hymenolepis nana*. Histochemical and fluorescent antibody techniques will be used in the studies.

Drs. W. S. Bailey (AUB '42), Department of Pathology and Parasitology, and W. G. Dacres, Ph.D., Department of Animal Disease Research, will conduct the research. Dr. Dacres is currently using fluorescent antibody techniques in the study of other diseases, including hog cholera and leptospirosis.

Virginia Veterinarians Attend Immunology Course

Approximately 60 veterinarians attended a course in applied immunology sponsored by the Virginia Agricultural Extension Service, the Virginia V.M.A., and the Virginia Polytechnic Institute Veterinary Science Department, in Blacksburg, Va., June 12-14, 1961.

Several authorities on immunology and related subjects made presentations at the meeting. Dr. R. A. Packer (ISU '40), Iowa State University, conducted a full-day session on basic immunology. Drs. J. E. Prier (COR '46), University of Pennsylvania; R. V. Johnston (TEX '48), Pitman-Moore Co.; and J. D. Ray (KCV '17), Affiliated Laboratories, also contributed to the program. Dr. G. V. Peacock (ISU '50), USDA, Washington, D.C., described federal regulations pertaining to distribution and evaluation of veterinary biological products. He was hopeful that many existing inadequacies in federal regulations would be remedied when the new National Disease Laboratory at Ames, Iowa, swings into full-scale activity.

Panel discussions were held on how to convince the farmer of the dangers of "do-it-yourself" vaccinating methods and on

evaluation of advertising claims made for biological products. No conclusions developed from the discussions, but participants reappraised existing situations and considered methods of improving pertinent veterinary activities.

Purdue Completes Electron Microscopic Laboratory

The School of Veterinary Science and Medicine, Purdue University, has recently completed construction of an Electron Microscopic Laboratory for teaching and research.

The 3-room laboratory consists of one room occupied by a new RCA EMU-3 electron microscope, a second room for the development of electron microscopic photographs, and a third for the preparation of tissues and viruses prior to electron microscopic study.

The work of the laboratory is administered by Dr. George C. Christensen (COR '49), head of the Department of Veterinary Anatomy. Dr. Edward J. Hinsman (MSU '58), an instructor in this department, is in charge of the operation of the microscope.

Research conducted in this laboratory is interdisciplinary in nature. In addition to studies of animal cytology and histology by members of the department of veterinary anatomy, research in microbiology, histopathology, and physiology will be conducted.

Electron microscopy is of major importance in detailed studies of cellular and tissue morphology; in the identification of virus and bacteria involved in animal diseases; and in studies of polymer, protein, and colloid structure. Direct electron image magnification of 200,000 is possible in the new facility and may reveal new orders of ultrafine structures.

Grant for Leptospirosis Study Awarded to Purdue

A 5-year research grant for the study of the "Virulence Factors and Epidemiology of *Leptospira*" has been awarded to Dr. Raymond L. Morter (ISU '57), associate professor of veterinary microbiology, Purdue



Dr. Raymond L. Morter, who recently received a \$123,002 grant for a leptospirosis study, is shown preparing a liquid solution to be placed in a refrigerated centrifuge.

University School of Veterinary Science and Medicine.

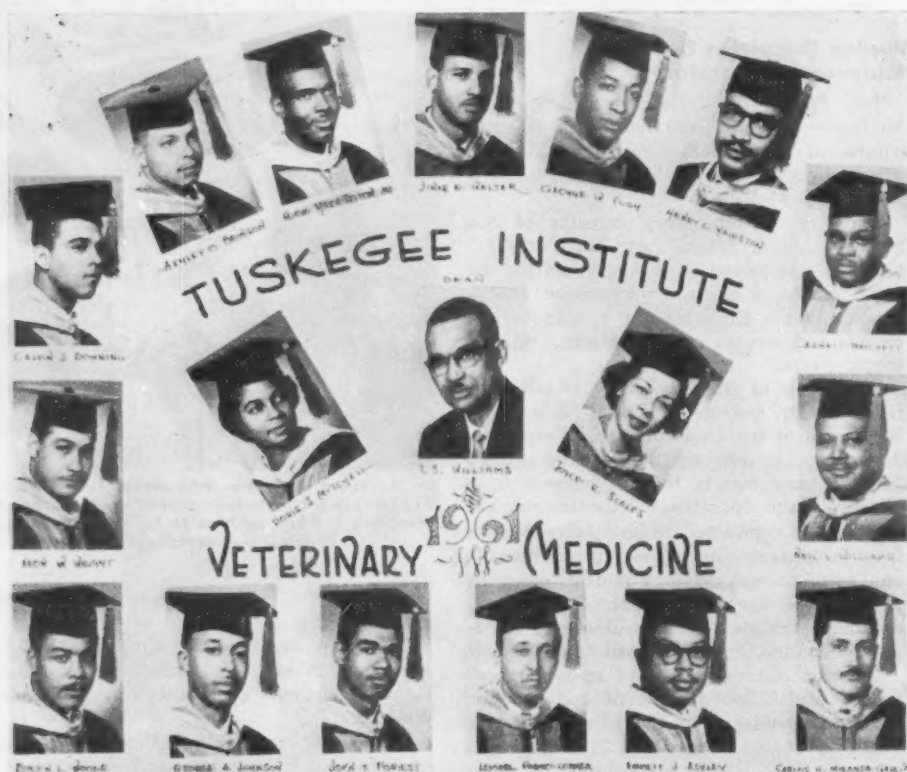
The grant was made by the National Institutes of Allergy and Infectious Diseases, U. S. Department of Health, Education and Welfare.

Dr. Morter, who joined Purdue University's faculty in 1960, has studied the effects of leptospirosis in various domestic animals since 1954 at the University of Wisconsin, Michigan State University, and Iowa State University. He has particularly emphasized in his studies the host-parasite relationship and the definition of the specific cellular mechanism by which the bacteria cause the disease.

Dr. Morter's co-workers in this study will be Dr. Robert M. Clafin (MSU '52), professor and head of the Department of Veterinary Microbiology, Pathology, and Public Health, and Dr. Teodulo M. Topacio, International Cooperation Administration trainee on leave from the College of Veterinary Medicine, University of the Philippines.

Commencements

Graduating Class, 1961, School of Veterinary Medicine, Tuskegee Institute



Top row (left to right)—Calvin J. Downing, Ashley O. Brinson, Rube Harrington, Jr., Jinks E. Walter, George W. Pugh, Henry C. Hairston, Arnett Matchett.

Second row—Aron W. Wright, Doris J. Mitchell, T. S. Williams, dean; Joyce R. Scales, Neil L. Williams.

Third row—Burton L. Woods, George A. Johnson, John T. Foriest, Ismael Radro-Correa, Emmett J. Ashley, Carlos H. Miranda-Garcia.

Tuskegee Institute

On May 22, 1961 senior veterinary students at Tuskegee Institute were awarded their D.V.M. degrees. There were 17 candidates presented. They were:

Emmett J. Ashley
Ashley O. Brinson
J. Calvin Downing
John T. Foriest
Henry C. Hairston
Rube Harrington
George A. Johnson
Arnett Matchett
Carlos H. Miranda

Doris J. Mitchell
Ismael Padro
George W. Pugh
Joyce R. Scales
Jinks E. Walter
Neil L. Williams
Burton L. Woods
Aron W. Wright, Jr.

Graduating Class, 1961, College of Veterinary Medicine, Oklahoma State University



RICHARD L. BLAKE



GERALD A. HEGREBERG



WILLIAM E. KYSER



ROBERT D. STEWART



JAMES G. GRAHAM



WILLIAM E. JOHNSTON



ROBERT L. BOSS



GARLAND B. LASATER



MICHAEL L. PODOLIN



ROBERT FISCHEL



RONALD D. LOCKWOOD



WILLIAM J. STRUBE



RICHARD L. RISSLER



ANTHONY C. THOMAS



MICHAEL J. JOUSE

Oklahoma State University
19 61
College of Veterinary Medicine



DAVID E. BRESHEARS



FRANK W. CRIDER



MARVIN L. DENNY



DANIEL R. JONES



JOHN E. TERRALL



JESS L. BREWER



WILLIAM S. MCDOWELL



PHILLIP W. DAY



BRIAN H. ESPE



CLAUDE B. VANZANT



ANDREW D. MACH



RUSSELL J. TATE



DONALD M. CAMPBELL



PHILLIP R. MAJOR



JERRY R. GILLESPIE



JAMES VANBECKUM



RICHARD E. DILLMAN



DONALD D. FORD



FREDERICK J. HENSLEY

Top row (left to right)—Richard L. Blake, Gerald A. Hegreberg, William E. Kyser, Robert D. Stewart, James G. Graham, William E. Johnston, Robert L. Boss.
Second row—Garland B. Lasater, Michael L. Podolin, Robert Fischel, Ronald D. Lockwood, William J. Strube, Richard L. Rissler, Anthony C. Thomas.
Third row—Michael J. Jouse, David E. Breshears.
Fourth row—Frank W. Crider, Marvin L. Denny, Daniel R. Jones, John E. Terrall, Jess L. Brewer, William S. McDowell.
Fifth row—Phillip W. Day, Brian H. Espe, Claude B. Vanzant, Andrew D. Mach, Russell J. Tate, Donald M. Campbell.
Sixth row—Phillip R. Major, Jerry R. Gillespie, James Vanbeckum, Richard E. Dillman, Donald D. Ford, Frederick J. Hensley.

Oklahoma State University

The College of Veterinary Medicine, Oklahoma State University, presented 34 D.V.M. degrees at the 1961 commencement exercises. They were awarded to:

Richard L. Blake
Robert L. Boss
David E. Bresbears
Jess L. Brewer

Donald M. Campbell
Frank W. Crider
Phillip W. Day
Marvin L. Denny

Richard E. Dillman
Brian H. Espe
Robert Fischel
Donald D. Ford
Jerry R. Gillespie
James G. Graham
Gerald A. Hegreberg
J. Frederick Hensley
Michael J. House
William E. Johnston
Daniel R. Jones
William E. Kyser
Garland M. Lasater

Ronald D. Lockwood
Andrew D. Mach
Phillip R. Major
William S. McDowell
Michael L. Podolin
Richard L. Rissler
Robert D. Stewart
William J. Strube
Russell J. Tate
John E. Terrall
Anthony C. Thomas
James VanBeckum
Claude B. Vanzant

Graduating Class, 1961, College of Veterinary Medicine, Iowa State University



Top row (left to right)—M. S. Anderson, C. W. Baltzell, D. V. Allen, R. C. Bryan, R. W. Chapin, W. W. Coder, J. F. Blass, J. B. Bormann, W. H. Cusick, K. Fettkether, R. D. Glock, S. J. Harless, D. M. Hein.

Second row—L. J. Celmer, Dr. M. A. Emmerson, Dr. F. K. Ramsey, Dr. B. W. Kingrey, Dean I. A. Merchant, Dr. R. Getty, Dr. R. A. Packer, Dr. M. J. Swenson, L. L. Henning.

Third row—R. E. Creel, R. L. Dalbey, W. V. Hobbie, W. E. Johnson.

Fourth row—R. C. Dillman, D. O. Ferguson, G. A. Kelso, J. J. Liska.

Fifth row—Clarence Fitz, A. L. Fox, G. G. Gabel, W. E. Giddens, R. L. Davis, C. J. DeVries, D. J. King, R. L. Lynch, A. H. Malley, R. F. Marshall, R. L. Mersch, W. M. Petty, J. R. Riddell.

Sixth row—C. R. Gomez, C. O. Haight, R. R. Matheson, R. D. Olson, D. A. Schnepf, J. P. Kunesh, J. P. Miller, J. L. Ringgenberg, K. J. Roach, V. W. Seltrecht, J. J. Sheldon, W. F. Showers, R. D. Spain.

Seventh row—J. M. Hamilton, F. J. Judge, D. R. Loudon, R. Schumacher, J. D. Stocker, E. J. Teachout, D. J. Ross, J. R. Winburn, G. H. TePaske, G. K. Vajda, P. C. Watkins, T. A. Willroth, B. T. Wolf.

Iowa State University.—On May 27, 1961, the College of Veterinary Medicine, Iowa State University, awarded 60 D.V.M. degrees. They were presented to:

Dan V. Allen
Charles W. Baltzell
Joseph F. Blass
Joel B. Bormann
Roger C. Bryan
Larry J. Celmer
Russell W. Chapin
William W. Coder
Robert E. Creel
William H. Cusick
Richard L. Dalbey

Ronald L. Davis
Calvin J. DeVries
Richard C. Dillman
Dale O. Ferguson
Kenneth Fettkether
Allan L. Fox
Gerald G. Gabel
William E. Giddens
Robert D. Glock
Carlos R. Gomez
Charles O. Haight

James M. Hamilton
Stanley J. Harless
Dale M. Hein
Leon L. Henning
William V. Hobbie
Wendell E. Johnson
Francis J. Judge
Gerald A. Kelso
Daniel J. King
Jerry P. Kunesh
Joseph J. Liska
David R. Loudon
Ronald L. Lynch
Arthur H. Mally
Richard F. Marshall
Robert R. Matheson
Robert L. Mersch
Jams P. Miller
Robert D. Oison

Wendell M. Petty
John R. Riddell
John L. Ringgenberg
Kenneth J. Roach
Dores J. Ross
Dale A. Schnepf
Richard Schumacher
Vernon W. Seltrecht
James J. Sheldon
William F. Showers
Richard D. Spain
Jack D. Stocker
Elvin J. Treachout
Gerald H. TePaske
Gaber K. Vajda
Peter C. Watkins
Thomas A. Willroth
James R. Winburn
Burton T. Wolf

Graduating Class, 1961, College of Veterinary Medicine, Colorado State University



Top row—(left to right)—F. L. Adams, S. Altman, F. E. Anders, B. B. Baker.

Second row—B. E. Beck, C. A. Behney, J. A. Blankenship, D. R. Bridgewater.

Third row—L. O. Brooksby, C. M. Chappelle, M. R. Clark, W. W. Clark, D. Cline, T. M. Craig.

Fourth row—A. D. Eads, Chiclerly Garcia, J. S. Gloyd, D. A. Gray, J. H. Gregory, R. Hartman, C. L. Holmes, R. T. Hutchison, G. W. Jackson, D. D. King, D. Klinkerman, M. T. Koster.

Fifth row—R. L. Krause, W. D. Krause, P. Kross, P. D. Langham, G. P. Law, M. T. Lockey, D. T. Marden, J. P. McQuade, G. P. Meyers, L. A. Miller, J. M. Morris, G. D. Mossberg.

Sixth row—E. W. Oscarson, M. D. Parks, R. W. Phillips, J. A. Pigford, J. E. Premer, M. T. Price, A. R. Rice, D. F. Roberts, G. Robertson, P. M. Rounds, W. A. Sargent, L. A. Selby.

Seventh row—C. L. Smith, L. D. Smith, L. Stoddard, J. E. Swearingen, L. E. Taber, C. H. Tillotson, R. K. Tramp, E. L. Troop, H. R. Voris, J. W. Wallace, J. M. Weinmann, R. N. Wiggins.

Colorado State University

At the 1961 commencement exercises of the College of Veterinary Medicine, Colorado State University, the following candidates were presented the D.V.M. degree:

Francis L. Adams
Sheldon Altman
Francis E. Anders
Benjamin B. Baker
Byron E. Beck
Charles A. Behney
John A. Blankenship
Donald R. Bridgewater
Lyle O. Brooksby
Charles M. Chappelle

Maynard R. Clark
Wilber W. Clark
Dixie Cline
Thomas M. Craig
Alan D. Eads
Joe S. Gloyd
Duane A. Gray
John H. Gregory
Robert Hartman
Charles L. Holmes

Robert T. Hutchison
George W. Jackson
Donrad D. King
Donald Klunkerman
Merrill T. Koster
Roger L. Krause
William D. Krause
Patricia Kross
Paul D. Langham
George P. Law
Merwyn T. Leckey
Donald T. Marden
James P. McQuade
Gerald P. Meyers
Leon A. Miller
James M. Morris
Gerald D. Mossberg
Pater C. Nderito
Ed W. Oscarson
Murrill D. Parks
Robert W. Phillips

Jean A. Pigford
James E. Premier
Michael T. Price
Allan R. Rice
Donald F. Roberts
Gerald Robertson
Peter M. Rounds
Wayne A. Sargent
Lloyd A. Selby
Charles L. Smith
Lot D. Smith
Lawrence Stoddard
Jack E. Swearingen
Lloyd E. Taber
Clive H. Tillotson
Richard K. Tramp
Eddie L. Troop
Herbert R. Voris
John W. Wallace
John M. Weinmann
Roger N. Wiggins

Graduating Class, 1961, School of Veterinary Medicine, University of California



Top row (left to right)—Alfred Adams, Jess L. Ayers, Lee G. Bates, Ralph D. Bohmyer, Harold D. Bolefahr, Jr., Marshall W. Brink.
Second row—Graham F. Burgess, Richard V. Chance, Robert H. Cockcroft, Edwin O. Colwell, Jr., Ralph S. Cooper, David M. Dickson.
Third row—Ralph W. Faulk, Joseph A. Femino, Michael R. Floyd, Laurie G. Fraser, James G. Galston, Linus J. Garcia, Jr.
Fourth row—Wallace F. Gidden, III, John W. Grau, Jack L. Halstead, Russell A. Hermanson, Dean D. E. Jasper, Jack W. Hitchman, Paul E. Hughes, Robert D. Hurd, Dennis O. Johnson, Steven L. Johnson.
Fifth row—Morton S. LaPittus, Roderick M. LaShelle, Jerome Lengyel, Don E. Lundholm, Gerald A. Molino, William S. Nieman, William J. Payne, David M. Roos, Lorraine Ruzic, Harold A. Stephens.
Sixth row—Lawrence E. Stickles, Jr., Erich Studer, Erwin A. Swanson, Virgil R. Traynor, Thomas J. Turner, Floyd A. Ventress, David M. Ward, Herbert H. Warren, Paul O. Wood, Jr., Robert Young, Jr.

University of California

At the commencement exercises of the University of California, School of Veterinary Medicine, 47 candidates received their D.V.M. degrees. They are:

Alfred Adams
Jess L. Ayers
Lee G. Bates
Ralph D. Behymer
Harold D. Bolefahr, Jr.
Marshall W. Brink
Graham F. Burgess

Richard V. Chance
Robert H. Cockcroft
Edwin O. Colwell, Jr.
Ralph S. Cooper
David M. Dickson
Ralph W. Faulk
Joseph A. Femino

Michael R. Floyd
Laurie G. Fraser
James G. Galston
Linus J. Garcia, Jr.
Wallace F. Glidden, III
John W. Grau
Jack L. Halstead
Russell A. Hermanson
Jack W. Hitchman
Paul E. Hughes
Robert D. Hurd
Dennis O. Johnson
Steven L. Johnson
Morton S. LaPittus
Roderick M. LaShelle
Jerome Lengyel
Don E. Lundholm

Gerald A. Molino
William S. Nieman
William J. Payne
David M. Roos
Lorraine Ruzic
Harold A. Stephens
Lawrence E. Stickle, Jr.
Erich Studer
Erwin A. Swanson
Virgil R. Traynor
Thomas J. Turner
Floyd A. Ventress
David Ward
Herbert H. Warren
Paul O. Wood, Jr.
Robert Young, Jr.

Graduating Class, 1961, College of Veterinary Medicine, Michigan State University



Top row (left to right)—John C. Ottenberg, Leonard N. Eames, Ross H. Bowman, Wilfred E. Gagne, Harry B. Etienne, Charles Thrush, Sydelle A. Berger, Thomas J. Horel, Walter E. Boyd, Gerald E. Ricketts, John R. Weiser, Alfred H. Jarvis.

Second row—William F. McCallum, Myron W. Marder, John J. Talsma, Cass Hoin, William D. Eberhart, Edward C. Heffron.

Third row—Harvey R. Myers, Charles A. Anderson, George A. Padgett, Donald C. Sawyer, Brian D. Coates, Alexander DePaoli, Robert A. Holmes, Ernest R. Benner.

Fourth row—Kenneth J. Martinsek, Duane L. Howe, Otis H. Patrick, Edward C. Scollon, Jr., Stanley M. Newman, Dean W. W. Armistead, Forrest Wollington, Samuel M. Getty, Ray T. Jacobs, Gordon C. Johnson, David E. Vitka.

Fifth row—Charles D. Essex, Jr., Gerald J. Fichtner, Paul W. Tulacz, Jack L. Blue, Marion B. Valerio, David A. Valerio, Harry C. Lavanchy, Karen W. Prescott, Roger G. Prescott, Richard H. Morrish, Barry M. Torine, Harvey F. Carlon.

Sixth row—Alfred C. Buchner, Donald P. Smith, Ingram E. Fidler, Bernard A. Brown, James E. O'Brien, Jerry S. Walker, Edward A. Williams, Jr., Francis L. Shearer, David R. Towar, Richard H. Updike, Stephen J. Maloney, Donald W. Lloyd.

Michigan State University

At the commencement exercises of the College of Veterinary Medicine, Michigan State University, 60 candidates received D.V.M. degrees. They were:

Charles A. Anderson
Ernest R. Benner
Sydelle A. Berger
Jack L. Blue
Ross H. Bowman
Waiter E. Boyd
Bernard A. Brown
Alfred C. Buchner
Harvey F. Carlon
Brian D. Coates

Alexander DePaoli
Leonard N. Eames
William D. Eberhart
Charles D. Essex, Jr.
Harry B. Etienne
Gerald J. Fichtner
Ingram E. Fidler
Wilfred E. Gagne
Samuel M. Getty
Edward C. Heffron

Cass Hoin
Robert A. Holmes
Thomas J. Horel
Duane L. Howe
Ray T. Jacobs
Alfred H. Jarvis
Gordon C. Johnson
Harry C. Lavanchy
Donald W. Lloyd
William F. McCallum
Stephen J. Maloney
Myron W. Marder
Kenneth J. Martinsek
Richard H. Morrish
Harvey R. Myers
Stanley M. Newman
James E. O'Brien
John C. Ottenberg
George A. Padgett
Otis H. Patrick

Karen W. Prescott
Roger G. Prescott
Gerald E. Ricketts
Donald C. Sawyer
Edward C. Scollon, Jr.
Francis L. Shearer
Donald P. Smith
John J. Talsma
Charles Thrush
Barry M. Torine
David R. Towar
Paul W. Tulacz
Richard H. Updike
David A. Valerio
Marion B. Valerio
David E. Vitka
Jerry S. Walker
Forrest Wellington
John R. Weiser
Edward A. Williams, Jr.

State Board Examinations

HAWAII—Sept. 7-9, 1961, Honolulu, Hawaii. Board of Veterinary Examiners, P.O. Box 3469, Honolulu, Hawaii.

Wilmer L. Dockstader (CVC '10), 79, St. Ansgar, Iowa, died April 22, 1961.
Dr. Dockstader was a general practitioner.

Carter F. Fox, 74, Kyger, W. Va., died June 12, 1961. Dr. Fox was retired.

Iles M. Hendrick (MCK '03), Owensboro, Ky., died in spring, 1961.

Dr. Hendrick, a general practitioner in Owensboro for nearly 58 years, was retired. He was a life member of the Kentucky V.M.A.

Deaths

Star indicates member of AVMA

Aden L. Boyd, 78, West Memphis, Ark., died June 12, 1961.

Dr. Boyd was retired. He had practiced in Little Rock and at one time served on the Livestock Sanitary Board of Arkansas.

***Edward A. Cahill** (UP '09), 75, Kansas City, Kan. died June 13, 1961.

Dr. Cahill was president of Allied Laboratories for 25 years and board chairman for 4 years before retiring in 1957. He was an Honor Roll member of the AVMA.

***William H. Cantwell** (CVC '18), 66, Shawano, Wis., died of a heart attack May 25, 1961.

Dr. Cantwell, a general practitioner, had practiced in the Shawano area since his graduation from veterinary college. He had been president of the Shawano school board for 15 years.

***Norman M. Twisselmann** (ISU '36), 47, Bakersfield, Calif., died May 26, 1961.

Dr. Twisselmann was retired.

C. S. Watt (CVC '15), 76, Collinsville, Ill., died April 14, 1961.

Joseph D. Wolf (KCV '09), 80, Kansas City, Mo., died March 12, 1961.

Dr. Wolf had retired several years ago.

Ansel K. Zellner (COR '13), 67, Oneida, N.Y., was killed in an automobile accident May 24, 1961.

Dr. Zellner had practiced in Oneida for 40 years. From 1938 to 1941, he was mayor of the city.



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questions and answers concerning standardization

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Q. *What is the practical value of Standardization?*



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Q. *Does Standardization identify quality?*



A. Yes! Standardization gives biological products proper potency identification, and allows high quality to speak for itself.

Q. *How do you know a product is Standardized?*



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Q. *Are all biologicals the same even though they are government regulated?*



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Q. *What is a unit of vaccine?*



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oxytetracycline HCl, plus vitamins A, D, and niacinamide to provide effective antibiotic treatment as well as the important benefits of vitamin supplementation—at a cost of only 10¢ per tablet.

And, they're scored for greater convenience.

Readily absorbed, these oxytetracycline tablets supply true broad-spectrum antibacterial action against many intestinal and systemic infections. Terramycin Fortified Pet Tablets can also be used before or after surgery—to reduce the number of pathogenic organisms for less chance of contamination, and to combat infections. And, they provide a con-

venient way to maintain oxytetracycline therapy following parenteral administration.

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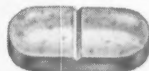
Pneumonias	Tonsillitis
Bacterial infections associated with canine distemper	Bronchitis
Urinary tract infections, such as cystitis and nephritis	Mixed bacterial infections
Infectious feline enteritis	Upper respiratory infections
	Pharyngitis
	Infectious bacterial enteritis

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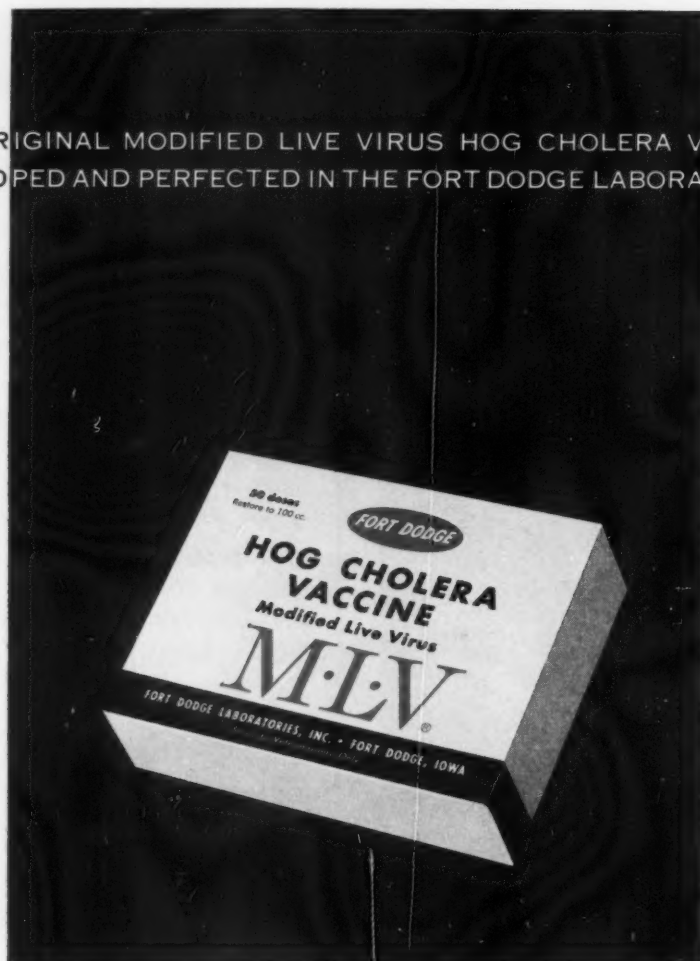
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Renal Osteodystrophy in the Dog

Robert S. Brodey, D.V.M., M.Sc.; William Medway, D.V.M., Ph.D.;

Robert R. Marshak, D.V.M.

PRIMARY hyperparathyroidism is a rare clinical entity in canine medicine.¹¹ Secondary hyperparathyroidism, however, is commonly observed in association with chronic nephritis. In a few such nephritic dogs, in which the jaws become rubbery and the teeth loosen, the disease has been variously designated as "rubber jaw,"¹⁵ "renal osteodystrophy,"¹⁷ "renal osteitis fibrosa cystica,"¹³ renal hyperparathyroidism,¹⁴ "osteorenal dystrophy,"¹⁶ "renal osteomalacia,"¹⁶ and "renal rickets."² This rather uncommon syndrome offers the research worker an excellent opportunity to study the various manifestations of chronic renal insufficiency with particular reference to skeletal changes.

Case Reports

Dog. 1.—A male Retriever-type dog 9 years old was presented for veterinary care Oct. 7, 1958, with a history of marked weight loss. Appetite was good, but often vomiting occurred several hours after eating. Polydipsia, polyuria, and listlessness had occurred over a 2- to 3-week period. Bowel movements were normal. The dog

had developed a stiff gait and walked with its back arched.

On physical examination, this 20-lb. dog was found to be in the terminal stages of uremia, with the typical changes of "rubber jaw." Temperature and pulse rate were normal, but the respiratory rate was rapid. Mitral insufficiency related to chronic valvular disease was also observed. Extreme decalcification of the bones of the jaws and skull was evident radiographically. The zygomatic arches, coronoid processes, angles of the mandibles, and the anterior half of the cranium were almost completely demineralized. There was some erosion of the tufts of the terminal phalanges. Following the collection of blood and urine samples, euthanasia was performed.

The characteristic findings of uremia, such as ulcerative stomatitis and hemorrhagic gastritis, were associated with severe chronic interstitial nephritis (Fig. 1 and 2). Both kidneys were small, pale, firm, and irregularly pitted. The right kidney weighed 20 Gm.; the left one, 17 Gm. The corticomedullary ratio was 1:3. The jaws and skull were soft, easily cut and, microscopically, had typical osteodystrophic changes. Other findings included chronic mitral valvulitis, sclerosis of the small coronary arteries, and several small foci of hemorrhage and thrombosis, one

From the School of Veterinary Medicine, University of Pennsylvania, Philadelphia. Dr. Medway is now at the Ontario Veterinary College, Guelph.

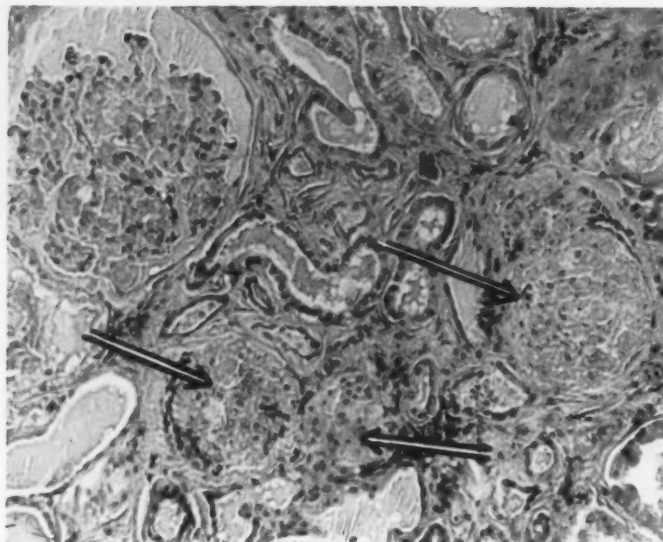


Fig. 1—Histologic section of the renal cortex (dog 1). There are hyalinized glomeruli (arrows), tubular epithelial degeneration, cast formation, transudation into a glomerular space, and interstitial fibrosis with focal leukocytic infiltration. x 60.

in the right occipital lobe and the other on the right ventral olfactory surface of the cerebrum.

Dog 2.—A male dog 6 years old and of mixed breeding was presented for veterinary care Oct. 14, 1959, chiefly because of inability to use its lower jaw. In April, 1959, the dog had diarrhea, occasionally tinged with blood, along with polydipsia, polyuria, and persistent vomiting

of 1 to 2 weeks' duration. When a veterinarian attempted to open the dog's mouth, it had cried in apparent pain and from then on was unable to close its lower jaw. A radiograph taken the following day revealed severe decalcification of the mandible and maxilla, with a fracture near the angle of each mandible. For the next 6 months, the owner hand fed the dog. During this period, he observed a fetid odor to the breath, poor appetite, persistent vomiting, polydipsia, and gradual weight loss. For the first 4 months after the jaw injury, the feces were often loose and contained blood and mucus.

On physical examination October 14, the dog seemed debilitated and dehydrated; it weighed 16 lb. Body temperature was 101.6 F.; pulse rate, 108; and respiratory rate, 18. The mucous membranes were very pale. *Fetor oris* was marked. The teeth were loose and the mandibular rami were soft and rubbery. Crepitus was present during lateral-medial motion of the mandibles in the area of the angles. Radiographically, the decalcification of the bones of the jaw and skull had advanced considerably during the 6 months following the mandibular fractures (Fig. 3). Electrocardiographic studies were negative. The mean blood pressure was 70 mm. Hg. The dog's condition rapidly declined, and it died after 3 days of hospitalization.

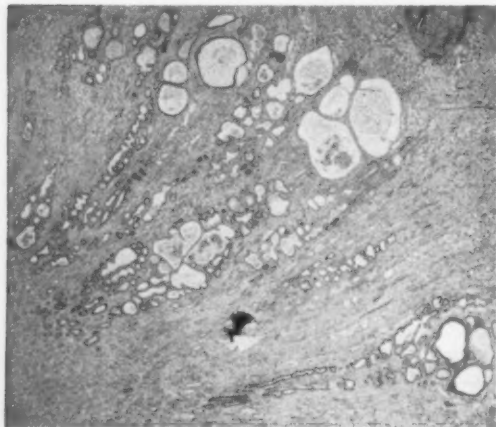
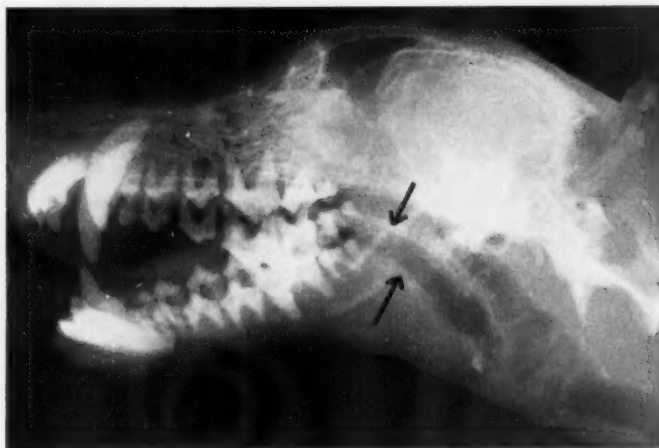


Fig. 2—In histologic section of the renal medulla (dog 1), many tubules are markedly dilated with atrophied epithelial linings. In other areas, there are foci of tubular epithelial regeneration. Extensive interstitial scarring is also present. x 7.

Fig. 3—Lateral radiograph of the head of dog 2; both jaws are almost completely decalcified. There are fractures of the angles (arrows) as well as almost complete destruction of the ventral cortical plates of the mandibles.



Pulmonary edema and left ventricular dilatation and hypertrophy were present along with hemorrhagic gastritis. Both kidneys were firm, shrunken, and nodular. The corticomedullary ratio was 1:4. Histologically, a severe sclerosing interstitial nephritis was present. The jaws, skull, and ribs were soft, easily cut, and microscopically had the classical changes of osteodystrophy.

Dog 3.—On Sept. 7, 1959, a male Chesapeake Bay Retriever 5 months old was referred* to the University of Pennsylvania Veterinary Hospital because of facial swelling. The pup was born on April 5, 1959, in a litter of 5, all of which appeared normal prior to weaning at 6 weeks. On May 27, when the pup was purchased, it was playful and in good physical condition. However, it refused most foods and would only eat small amounts of milk, eggs, and chopped meat. The pup always seemed to be thirsty and drank a quart or more of water daily.

It was given anti-canine distemper serum on June 16 and chicken embryo origin distemper vaccine June 30, at which time it weighed 20 lb. Bowel movements were always normal, and vomiting occurred only once. During the last week of July, the pup developed twitching of its lips and made constant chewing motions as if it had a foreign body in its mouth. By the 2nd week in August, the owner noticed a rapidly developing swelling of the pup's

face. From this time until euthanasia 1 month later, there was a progressive decrease in the pup's appetite, until it was unable to eat at all because of thickening of its jaws. During this same period, the polydipsia became more and more severe. At no time during the pup's illness did it appear to have a febrile response.

On physical examination September 7, it



Fig. 4—Dorsal view of the head of dog 3. There is extreme facial distortion secondary to bilateral maxillary swellings.

*Dr. Milton Coleman, Trenton, N.J.

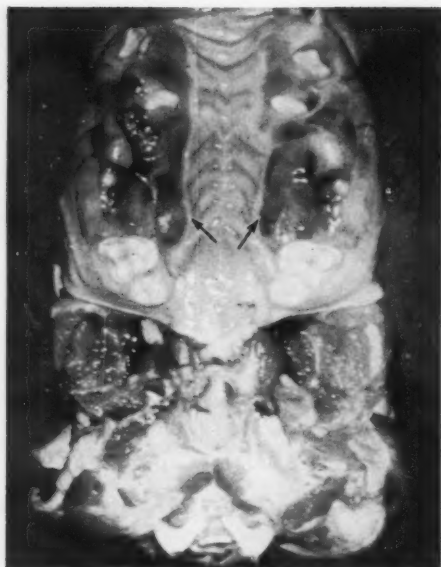


Fig. 5—Ventral view of the upper jaw and skull of dog 3. Soft, bluish, bilateral gingival masses (arrows), containing loose malpositioned teeth, have compressed and distorted the hard palate.



Fig. 6—In ventrodorsal radiograph of upper jaw and skull (dog 3), bilateral soft tissue maxillary swellings encroach on the turbinate region. There is complete destruction of alveolar bone with gross displacement of many of the permanent and deciduous teeth.



Fig. 7—Dorsoventral radiograph of the mandible (dog 3). There is severe decalcification of bone with excessive soft tissue replacement and displacement of many teeth. The medial cortical plates are also undergoing severe resorptive changes.

was dehydrated and cachectic, weighing only 21 lb. The body temperature was 102.5 F.; the pulse rate, 132; and the respiratory rate, 22. The pup's face and jaws were altered in a most remarkable way. There were large, bilaterally symmetrical, painful swellings of the maxillae (Fig. 4). These soft, bluish, partly cystic swellings, which were covered by congested superficial veins, bulged into the mouth causing marked compression and distortion of the hard palate (Fig. 5). Areas of hemorrhage and ulceration were present at both gingivopalatine junctions. The gingiva of the upper incisor area was slightly swollen but not discolored. Most of the teeth were irregularly situated, and many were displaced laterally by the erupting permanent teeth. Some of the teeth were brownish and others had a hyaline appearance. Both

mandibles were soft, and the horizontal rami were moderately thickened and bluish. There was poor union of the mandibular symphysis. The forelegs had a rachitic appearance, and the costochondral junctions were slightly enlarged.

Intravenous urography was attempted, utilizing 20 cc. of radiopaque contrast medium, but visualization of the kidneys was not obtained, indicating renal inability to concentrate the dye.

The dog was markedly hyperesthetic. Auscultation of the heart and lungs was negative. There were no electrocardiographic abnormalities and the mean systemic blood pressure was 70 mm. Hg. The subcutaneous tissues in the axillary regions and over both elbows were thickened. The testes were small and soft. Euthanasia was performed on the 2nd day of hospitalization, when it was apparent that death was imminent.

The radiographic changes in this dog were more severe and more generalized than in the other 3 dogs. Following euthanasia, the involved bones were disarticulated, dissected free of soft tissues, and individually radiographed to allow more detailed study. The jaws and skull were extremely decalcified. The maxilla was severely distorted by 2 large soft tissue masses which compressed the turbinates and bulged laterally on each side (Fig. 6). There was also marked malpositioning of the teeth and the alveolar bone was almost wholly absent (Fig. 7).

Large radiolucent foci were evident around the roots of many of the teeth. Multiple fractures were present just proxi-

mal to the costochondral junctions of many of the ribs and, in several instances, callus formation was evident (Fig. 8). A radiographic survey of the appendicular skeleton was negative except for extensive subperiosteal resorption at both distal ulnar metaphyses and, to a lesser extent, at both distal radial metaphyses (Fig. 9).

The carcass was emaciated, dehydrated, and markedly stunted. The blood was watery, and the left ventricle slightly dilated. The maxillary enlargements consisted of bilateral 4.0- by 4.2-cm. masses extending from the lateral edge of the hard palate to the lateral gingival border. These soft, reddish brown masses, which on cut section contained gritty areas and small cysts, had encroached markedly on the turbinate bones (Fig. 10). The bones of the skull and jaws were soft and easily cut. The cranial bones were also moderately thickened.

The distal metaphyseal areas of each radius and ulna were soft and discolored, with thinning and softening of the overlying cortex. The parathyroid glands were slightly enlarged. Both kidneys appeared normal in size but had pale tannish yellow nodular surfaces and were abnormally firm. On cut section, they were pale and tannish with cysts 1 to 3 mm. in diameter in their cortices. The left kidney weighed 35 Gm., the right 37 Gm. The corticomedullary ratio ranged from 1.0:2.0 to 1.0:2.7.

Microscopically, most of the cortical bone of the mandible had been destroyed and replaced by a soft, cellular, fibrous connective tissue which was rich in multinucleated giant cells (Fig. 11 and 12).

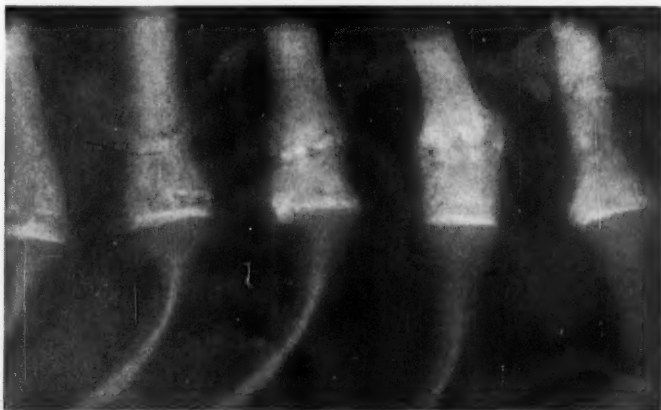


Fig. 8—Lateral radiograph of the ribs (dog 3) in which there are fractures in the costal portions. Advanced callus formation is present in the 2nd rib from the right.



Fig. 9—Lateral radiograph of the right foreleg (dog 3). There is extensive subperiosteal resorption of the metaphysis and distal diaphysis of the ulna (arrow). Early resorptive changes are also evident in the anterior border of the radial metaphysis (arrow).

There was complete destruction of the alveolar bone and the periodontal membrane so that the fibrous connective tissue was in direct contact with the cementum of the tooth (Fig. 13). In the distal radius and ulna, there were typical osteoclastic resorption of bone and fibrocellular replacement characteristic of osteodystrophy (Fig. 14). The parathyroid glands were hyperplastic. There was metastatic calcification in both adrenal glands.

The kidneys were the seat of severe pathologic changes characterized by marked interstitial fibrosis with a few foci of monocytic infiltration and marked distortion and dilatation of the tubules and glomeruli. Destruction of tubular epithelium and hyaline casts were commonly observed. Most glomerular tufts were atrophic or absent, and the glomerular capsules were often thickened (Fig. 15 and 16). There were calcium deposits in the glomerular capsules, tubular epithelium, and interstitial tissues.

Dog 4.—On April 14, 1960, a male Dalmatian 2 years old with bilateral maxillary swellings of 1 month's duration was presented for veterinary care to a local veterinarian.* Polydipsia and polyuria had been observed throughout the dog's life. The dog had seemed normal in all other respects. A clinical diagnosis of "rubber jaw" had been confirmed by appropriate

*Dr. J. Stefanic, Erie, Pa.



Fig. 10—Transverse section through the maxilla (dog 3). The bilateral cystic soft tissue masses have compressed the turbinate region and the hard palate.

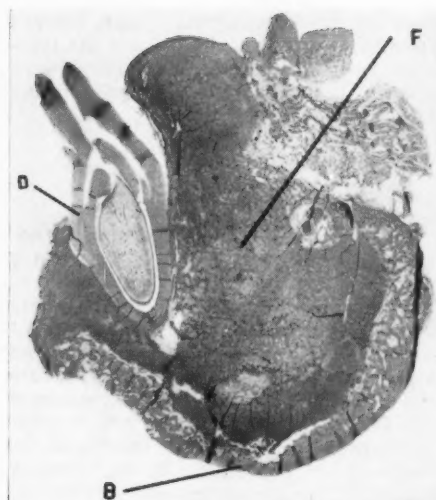


Fig. 11—Histologic section through the tooth, alveolus, and mandible (dog 3). The remaining cortical bone (B) can be seen on the lower and right hand borders of the specimen. The rest of the mandible is completely replaced by fibroblastic tissue (F) containing cystic spaces near the tooth apex. The dentin (D) of the tooth contains numerous artifacts. The enamel has been removed during the decalcification process. $\times 4$.

laboratory and radiographic studies (Table 1). On April 19, the patient was referred to our clinic for further studies.

The dog was depressed, moderately thin, and had generalized hyperesthesia. The body temperature was 99.8 F.; pulse rate, 120; and respirations, shallow and rapid. There was marked pallor of the mucous membranes. The maxillary enlargements, which were the result of bilaterally symmetrical bluish swellings of the lateral gingivae, were similar to those in dog 3 but were much less severe. All the teeth were freely movable and the upper and lower jaws were soft and resilient. On radiography, changes characterized by destruction of bone were seen, particularly around the tooth apices (Fig. 17). Small soft tissue masses were present in each upper lateral gingival area. A skeletal survey was negative except for areas of fragmentation of the costal cartilages and some erosion of the tufts of the terminal phalanges.

Peaked T waves, a common electrocardiographic finding in hyperkalemic states, were detected on 3 occasions during the dog's hospitalization. The systolic blood

pressure was 170 mm. The right optic disk had an indistinct margin, but the left disk appeared normal.

On the morning of April 20, the dog vomited a yellow mucoid material. Early in the afternoon, generalized trembling developed, and the gait became stiff. The dog began to tremble severely and started circling aimlessly in its cage. Involuntary passage of blood-tinged urine also occurred at this time. A few minutes later, severe generalized tonic-clonic convulsions accompanied by profuse salivation developed. Nystagmus was observed for the first few moments of the seizure which lasted for 2 hours. Calcium borogluconate (40 cc. of a 12.5% solution) was given slowly intravenously in an attempt to determine if hypocalcemia were playing a role in the development of the neurologic symptoms.

Blood samples for calcium, phosphorus,

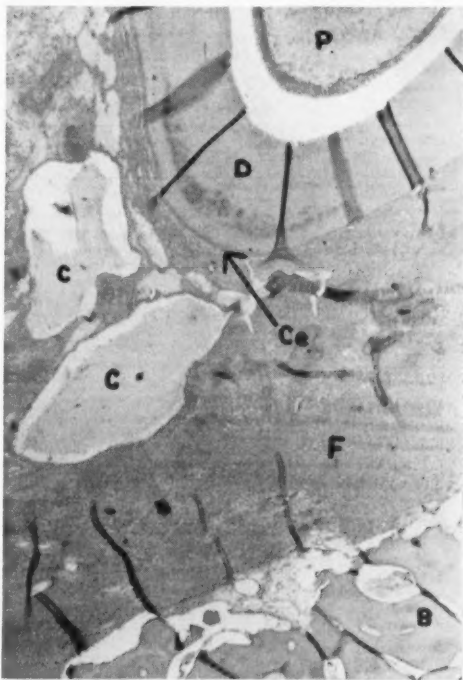


Fig. 12—Higher magnification of Figure 11 near the apex of the tooth. Dental pulp (P), dentin (D), cementum (Ce), fluid-filled cysts (C), fibrous tissue (F), and bone (B) are indicated. There is complete absence of the periodontal membrane and alveolar bone. Artifacts are present in the dentin and between the dentin and pulp. $\times 10$.

and other electrolytes were taken during and at the conclusion of the convulsive seizures (Table 1). The dog remained extremely depressed and had occasional localized tetanic spasms the rest of the day. Its pulse rate ranged from 68 to 80 and was irregular. The following day the dog became comatose and died.

The carcass weighed 48 lb. and was thin and dehydrated. The mucous membranes were pale. The facial bones, particularly the maxillae, were bilaterally swollen and softened. All teeth were loose. The heart was greatly enlarged and globular. The right ventricle was thin-walled and the left ventricular wall was hypertrophied. There was marked enlargement of the parathyroid glands and mild gastritis. The right kidney weighed 37.5 Gm. and the left 39.6 Gm. Both kidneys were small, pale, and firm, and had diffusely pitted surfaces. The corticomedullary ratio was 1:4 to 1:5, and the cortices were mottled with grayish foci (Fig. 18).

The main histologic findings were hyper-

plasia of the parathyroid glands, severe chronic interstitial nephritis, and the typical changes of osteodystrophy. There were no gross or histologic alterations in the brain.

Clinical Pathology

The results of the blood and urine studies are shown (Table 1 and 2). There was severe aplastic anemia and mild leukocytosis in all dogs. The differential counts were characterized by a preponderance of neutrophilic leukocytes with few to no nonsegmented cells. The sedimentation rate in one dog (dog 1) was markedly elevated (150/152).

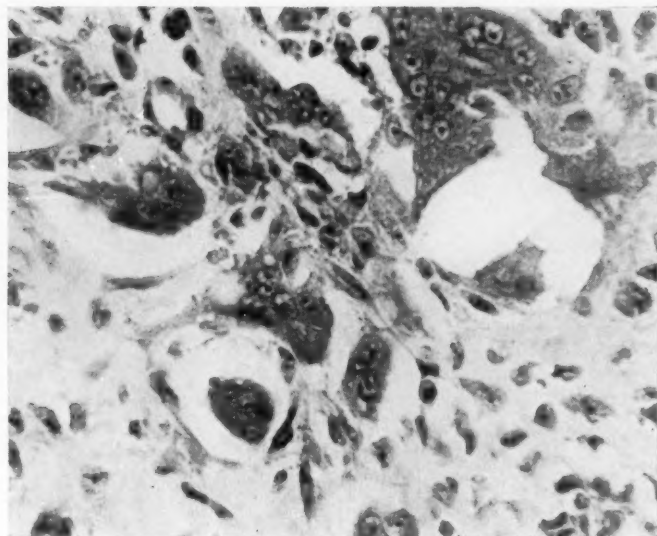
Chemical examination of the blood indicated severe azotemia in all dogs. In 3 of the 4 dogs, there was depression in the serum calcium level. Serum inorganic phosphorus levels were markedly elevated in all cases; in dog 1, the value was about 10 times normal. Serum alkaline phosphatase

TABLE 1—Clinical Laboratory Findings in Renal Osteodystrophy

Laboratory test	Dog 1	Dog 2		Dog 3		Dog 4		
		10/14/59	10/16/59	9/7/59	9/11/59	4/14/60	4/19/60	4/21/60
Hb. (mg./100 ml.)	5.7	4.2	5.6	.....	5.5	6.2	5.9	4.4
Hct value (%)	20	15	16	.....	20	19	21	18
RBC (per cmm.)	1,390,000	1,750,000	1,840,000 hypo- chromia, target cells	.....	2,810,000	2,200,000	2,270,000	2,720,000
WBC (per cmm.)	20,350	16,800	14,900	.....	17,900	12,500	20,350	16,200
Segmented (%)	91	82	88	.....	69	62	91	85
Nonsegmented (%)	.....	.....	.....	.....	2	20	6	9
Lymphocytes (%)	1	13	5	.....	8	16	2	4
Monocytes (%)	8	4	7	.....	11	.....	1	2
Eosinophils (%)	.....	1	.....	.....	10	2	1	.....
b.u.n. (mg./100 ml.)	168.0	175.0	.....	.....	175.7	220.0	176.7	175.0
Serum calcium (mg./100 ml.)	10.6	10.5	8.5	6.0	11.0	4.2	6.5	8(27*)
Serum inorganic phosphorus (mg./100 ml.)	47.2	30.0	14.0	14.0	28.0	7.5	27.0	28(33*)
Serum alkaline phosphatase (Bodansky units)	36.2	3.5	14.4	.....	9.8	.....	1.8	.....
Serum Na (mEq/L)	150.0	147.5	170.0	157.5	158.0	.....	158.8	156.7
Serum K (mEq/L)	4.7	5.1	7.3	5.3	7.3	.....	5.3	6.3
Serum Cl (mEq/L)	.....	110.3	122.2	.....	120.0	.....	113.0	103.7
Serum Mg (mEq/L)	.....	2.1	2.3	.....	.....	.....	.....	1.3
Serum CO ₂ con- tent (mM/L)	8.4	14.7	10.7	.....	4.9	.....	15.2	8.2

*Values obtained 1 hr. after intravenous calcium therapy.

Fig. 13—High power magnification of fibrous tissue replacement in mandible shown in Figure 11. Large multinucleated giant cells are surrounded by highly cellular fibroblastic tissue. x 50.



values ranged from normal to 36.2 Bodansky units.

The serum sodium levels were essentially normal with the exception of terminal elevation in dog 2. Terminal hyperkalemia occurred in dogs 2, 3, and 4; serum chlorides in dogs 2 and 3 were also elevated terminally. Serum magnesium values in dogs 2 and 4 were within the normal range. The total CO_2 content of the blood serum of all dogs indicated severe acidosis.

The urine studies in all 4 dogs reflected severe kidney damage. This was characterized by low specific gravity, the presence of blood cells, renal epithelia, casts, and proteinuria.

Discussion

A review of case records at the University of Pennsylvania indicates that renal osteodystrophy is principally a disease of

TABLE 2—Clinical Laboratory Findings in Renal Osteodystrophy

Urinalysis	Dog 1	Dog 2	Dog 3		Dog 4		
			9/10/59	9/11/59	4/14/60	4/20/60	4/21/60
Specific gr. vity	1.015	1.010	1.012	1.010	1.012	1.008	1.010
Color & turbidity	Pale yellow; turbid	Pale yellow; clear	Pale yellow; turbid	Pale yellow; turbid	Normal	Slightly cloudy	Very turbid
Reaction	Alkaline	6.0	6.0	6.4	Acid	5.0	5.0
RBC	.....	.....	+	+++	.....	+	.....
WBC	+	++	++++	++++	.....	+	++++
Epithelia	.....	Renal & squamous ++	Renal, transitional & squamous +++++	Renal, transitional & squamous ++	.....	Renal & squamous +	Renals +
Protein	++++	++	++	++	++	++	++
Casts	.....	Fine & coarse granular +++++	Hyaline & fine & coarse granular +++++	Fine & coarse granular +++++	.....	.....	.....
Crystals	Calcium oxalate +++++	Uric acid +	Calcium oxalate +	Amorphous urates +++++	.....	Amorphous urates ++	Amorphous urates ++
Bacteria	.....	++++	++++	.....	.....	.....	++++

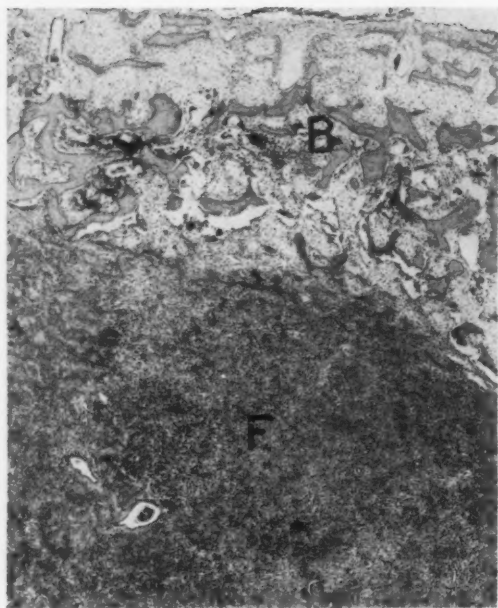


Fig. 14—Histologic section of the right ulnar metaphysis shown in Figure 9 (dog 3). There is extensive subperiosteal bone resorption with fibrous tissue replacement (F). Normal cortical bone (B) remains in the upper right. x 10.

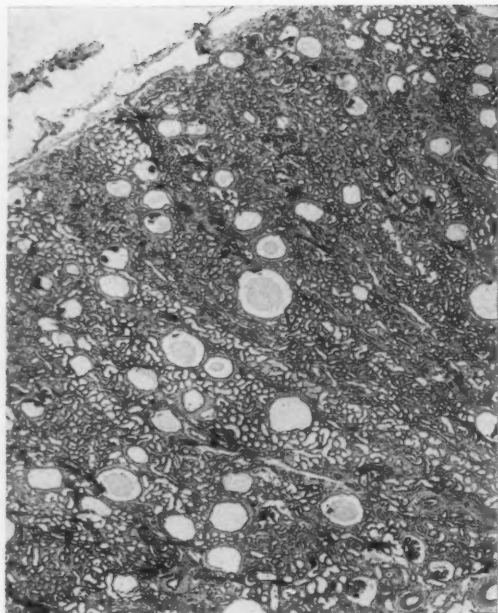


Fig. 15—Histologic section through the corticomedullary junction of the kidney (dog 3). There is interstitial scarring of the medulla with secondary cystic dilatation of the glomeruli and convoluted tubules of the cortex. x 3.5.

older dogs. This is substantiated in the small number of cases reported in the American literature,^{3,14,20} and contrasts sharply to the situation in man, in whom it occurs more commonly in childhood.¹ In the present series, however, 2 out of 4 dogs had signs of renal insufficiency soon after birth. This insufficiency was more severe in dog 3, in which osteodystrophic changes were observed prior to the time of epiphyseal closure (true renal rickets). Dog 4 did not have clinical signs of osteodystrophy until well after epiphyseal closure, although polydipsia and polyuria were observed when it was 6 weeks old.

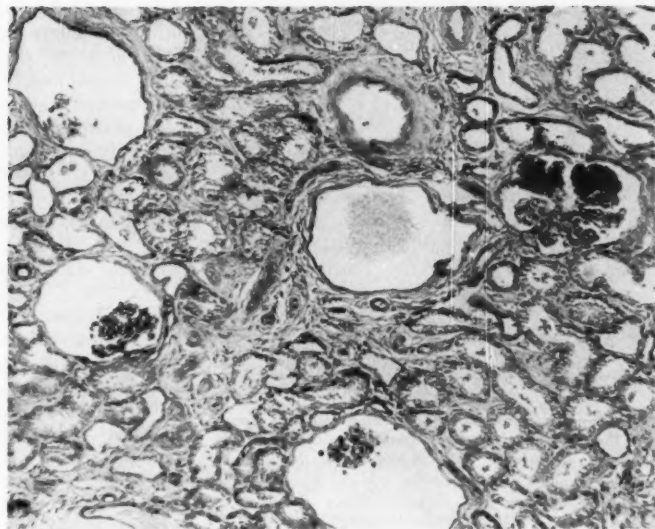
In Sweden, a uremic syndrome in young dogs, mostly Cocker Spaniels, has been attributed to congenital hypoplasia of the renal cortices.¹⁰ A few of these dogs also developed osteodystrophy. Whether the condition in dogs 3 and 4 in our series should be categorized as renal cortical hypoplasia is questionable since the corticomedullary measurements said to be characteristic of this disease were of a borderline nature. However, the presence of

polyuria and polydipsia in a young pup lacking a history of febrile illness and leading to progressive kidney failure suggests the possibility of some congenital or hereditary renal lesion. A littermate of dog 3 also failed to grow normally and died when 7 months old, supposedly from distemper encephalitis. Unfortunately, a necropsy report could not be obtained.

Histologically, in the kidneys from all 4 dogs, there was advanced chronic nephritis characterized by marked interstitial fibrosis, severe distortion, and destruction of glomeruli and tubules, and varying degrees of calcification.

Leptospirosis is thought to be a common cause of chronic nephritis. However, the actual percentage of nephritis cases due to leptospirosis is unknown. Other possible etiologic factors include pyometra, prostatitis, cystitis, bronchopneumonia, filariasis, and numerous other infections. Chronic nephritis is present to some degree in 80% of dogs 8 years old or over,² and uremic states associated with nephritis are frequently encountered. Al-

Fig. 16—Higher magnification of renal cortex (dog 3). The glomeruli are extremely cystic, Bowman's capsules are thickened, and most glomerular tufts are partially or completely destroyed. Tubular distention and degeneration are present along with scarring of the interstitium. $\times 50$.



though microscopic evidence of osteodys-trophy is present in most dogs with chronic nephritis,¹⁵ only a small percentage develop clinical signs.

In dogs with chronic renal failure, the urine flow is usually high except terminal-ly, when oliguria may develop; urea clearance is depressed, resulting in azotemia. Plasma sodium levels are usually normal unless there is extrarenal dehydration from vomiting or diarrhea and hyperkale-mia is a terminal phenomenon. As a rule, proteinuria is not heavy.

The renal defense against acidosis is seriously impaired in dogs with chronic nephritis. Not only does loss of nephrons interfere with the elimination of fixed anions such as phosphate and sulfate, but the sparing of cations through urine acid-ification and formation of ammonia is greatly diminished.⁴ In renal failure, the retention of phosphate, sulfate, and organ-ic acids is increased. The plasma bicarbo-nate level is reduced, primarily because the tremendous loss of functioning nephrons renders the kidney incapable of regenerat-ing sufficient bicarbonate.¹⁷

The hypocalcemia appears to be related principally to increased loss of calcium in the feces, decreased dietary calcium intake, and the presence of hyperphosphatemia.⁹ Poor absorption of calcium, resulting in increased loss of endogenous and exoge-nous calcium in the feces, may be related to

high phosphate levels in the gut believed to occur when renal phosphate clearance is impaired.¹⁸ The excess phosphate is thought to bind calcium in an insoluble form. In addition, inhibition of citrate pro-duction in the gut wall by acidosis would tend to decrease calcium absorption.⁸ The relative importance of the various mecha-nisms leading to hypocalcemia has not been evaluated. However, it has been clearly shown that, in response to hypocalcemia, the parathyroid glands undergo hyperpla-sia.¹³ This serves to maintain normal se-rum calcium levels by mobilization of skel-et al reserves.

Parathormone also causes decreased re-sorption of phosphate by the renal tubules

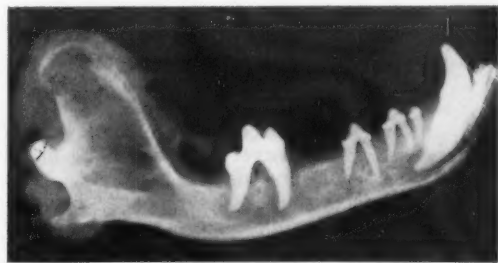


Fig. 17—In lateral radiograph of the left mandible (dog 4), there is extensive destruction of bone which is most apparent in the alveolar region and in focal areas about the tooth apices. There is beginning resorption of the ventral cortical plate.



Fig. 18—In cut section of the right kidney (dog 3), the abnormal corticomedullary ratio (1:4 instead of 1:2) is apparent.

resulting in increased urinary phosphate excretion.¹⁰ However, in chronic nephritis, the number of functional nephrons becomes so reduced that the kidney cannot eliminate phosphate normally and hyperphosphatemia results.

Normally the forces of destruction and formation of bone are in dynamic equilibrium. In renal osteodystrophy, this balance is upset in the following ways: (1) excess parathormone stimulates osteoclastic resorption of bone; (2) excess parathormone and acidosis inhibit calcification of newly formed bone; and (3) hypocalcemia results in insufficient mineralization of the osteoid of growing bone.¹

Thus, while bone destruction is accelerated, bone formation is inhibited and there is fibrous replacement of destroyed bone. Clinically, the osteodystrophic changes are usually restricted to the jaws and skull (and terminal phalanges, radiographically⁷) in adult dogs. Apparently more widespread skeletal portions are affected in dogs which have osteodystrophy prior to the time of epiphyseal closure.

Normally, the root of each tooth is suspended in its socket by the oblique fibers of the periodontal membrane which connect the alveolar bone to the cementum layer of the tooth. Any pressure exerted on the tooth during mastication is transmitted by these oblique fibers to the surrounding alveolar bone.¹² In renal osteodystrophy, the alveolar bone appears to be the earliest and the most severely affected portion of the

skeleton. Following alveolar bone resorption, the fibers of the periodontal membrane lose their point of attachment, become weakened, disorganized, and finally disappear. In severe cases, the ventral cortical plate of the mandible may also be markedly involved. Clinically, the teeth become movable, and the jaws are resilient, hence the term "rubber jaw." The alveolar bone can be likened to a thin cribiform plate and is thus more readily destroyed than the dense cortical bone of the mandible.⁵

In the absence of reliable data, our understanding of the pathogenesis of renal osteodystrophy remains largely speculative. Pathologic and radiologic descriptions of bone, kidney lesions, or both, although contributory, cannot in themselves clarify the direction of the various cause and effect relationships. Ultimately, it will be necessary to relate bone, kidney, and parathyroid gland changes at every stage of the disease to findings in the blood and urine and to balance data for calcium, phosphorus, and nitrogen.

Summary

The clinical, radiologic, laboratory, and necropsy findings of 4 dogs with renal osteodystrophy have been described. All dogs were presented for veterinary attention in terminal uremia and had classical gross and microscopic osteodystrophic changes in jaw and skull bones. Severe chronic nephritis and hyperplasia of the parathyroid glands were present in all 4.

In 2 dogs, the renal disease may have been congenital or hereditary in origin since both dogs had clinical signs of renal insufficiency when 6 weeks old. The skeletal changes in 1 of these dogs occurred prior to epiphyseal closure and were more extensive and generalized than those in the other 3.

Diminished absorption of calcium from the gut, together with decreased dietary calcium intake and hyperphosphatemia, are thought to lead to hypocalcemia. This results in hyperplasia of the parathyroid glands with subsequent osteoclastic resorption of bone.

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Sterile Fly Release Resumed in Florida with Finding of Screwworms

Distribution of male screwworm flies sterilized by irradiation was initiated recently in Holmes County, Florida, after 100 screwworm larvae were found in a 2-week-old pig. Within two weeks, larvae were found on 4 other animals. These larvae were the first found in Florida since June, 1959.

Sterilized screwworm flies were flown to Florida from the ARS entomology research laboratory at Kerrville, Texas, where the flies are produced and exposed in the pupal stage to radioactive cobalt.—USDA News Release, June 23, 30, 1961.

Correction—How to File Information

In the report "How to File Information—and Find It" by Moshe Shifrine and D. A. McMartin (June 1, 1961, JOURNAL, pp. 613-615), on page 614 about the middle of the 2nd column, the following statement is in error:

Mycoplasma infections: Under "Specific Disease," *Mycoplasma gallisepticum* infection corresponds to No. 18 in Fig. 2; holes 27, 30, and 31 are notched.

It should read:

Mycoplasma infections: Under "Specific Disease," *Coryza* (*Mycoplasma gallisepticum* infection) corresponds to No. 18 in Table 1; therefore, holes 27, 30, and 31 are notched (Fig. 2).

Swine Repopulation

IV. Influence of Management upon the Growth of Specific Pathogen-Free (SPF) Pigs

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THE TREND in modern swine population has been toward raising more pigs on fewer farms. There has been an associated trend toward the use of larger central farrowing facilities as a means of increasing production. Multiple farrowing has been encouraged simultaneously to reduce the fixed investment per sow and to help stabilize market prices.

A group of 35 brooder-raised SPF pigs, placed alone in a clean, carefully disinfected barn when 3.5 weeks old, increased in weight constantly and averaged 42 lb. when 56 days old. A comparable group of 39 SPF pigs, littermates of the preceding group, were similarly raised in brooders until 3.5 weeks old. Then they were placed in a large barn with 150 pigs ranging in age from 4 to 22 weeks. All of the 150 pigs originated by hysterectomy and were raised in brooders before they were combined into this large group. A definite depression in growth was noticeable among the 39 younger pigs, which averaged in weight 31 lb. when 56 days old, or 11 lb. less than their 35 littermates placed in an environment by themselves. There was no direct contact between older and younger pigs in the large building. Growth depression may have been caused by air-borne microorganisms.

The purpose of this report is to describe some effects of management and housing practices on the growth rate of pigs.

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Materials and Methods

Performance records from 1,726 naturally farrowed, crossbred SPF pigs from 172 litters were used in this study. Part of these, 132 litters, were produced in central farrowing houses. Forty litters were farrowed in 20 individual houses. Weights were obtained at 56 and 140 days to measure performance levels. An "early" group was composed of pigs farrowed in the 1st half of one total farrowing period of not more than 28 days. A "late" group included pigs from sows which farrowed in the same environment but in the 2nd half of the farrowing period. Pigs from "middle" litters were not included when uneven numbers of sows farrowed.

The lungs and snouts from a representative sample consisting of 7 to 12 pigs, approximately 5 months old, were examined at slaughter to determine if the herds were free of virus pig pneumonia and atrophic rhinitis. Methods to determine the SPF status have been explained earlier.³ The performance of early and late SPF pigs were compared.

Results

Mortality among SPF pigs was essentially the same in the early farrowed and late farrowed pigs (Table 1). Clinical disease was not diagnosed in the pigs during the experiment. There was relatively low mortality in both groups.

The early group, farrowed in central houses, averaged 5 lb. more per pig at 56 days than the late group (Table 1). The early pigs were 12 lb. heavier at 140 days than the late farrowed pigs raised in the same central house.

No significant differences were observed at 56 or 140 days in average weights of the 40 early and late litters farrowed in individual houses. The partial isolation was considered a major factor responsible for greater uniformity in performance.

Discussion

From the data on early and late farrowed pigs (Table 1), it seems apparent that pigs benefit from isolation in small groups of 30 to 50 of similar age. Although pigs were in the same building, pig-to-pig contact was not a major source of microbial transmission because litters were raised in separate pens often separated by alleys or solid panels.

Under certain housing conditions the air supply may carry disease-producing organisms. Newcastle disease virus has been recovered from the air of a poultry house containing infected birds.¹ Caged layers or birds in separate pens were infected by the air-borne virus in a building in which there was no bird-to-bird contact. Air-borne transmission of psittacosis virus was demonstrated by exposing uninfected birds in a manner which precluded infection by physical contact with infected birds or by exposure to contaminated droppings.³

Raising pigs in relatively small groups apparently augments performance. This conclusion can be substantiated by results obtained in one cooperating herd in Nebraska's SPF program. An average of 10 pigs per sow have been marketed with an average 56-day weight of 46 lb. and an average 140-day weight of 176 lb. for pigs farrowed during a period from 1958 to 1960. This excellent performance appears to have resulted from the utilization of the principles of isolation of young pigs and "disease-free" litters. Heat lamps or guard rails were not used in this herd. Sows have farrowed unattended in small isolated buildings with 8 to 12 inches of straw. Mortality has averaged only 11.1%. Some of these practices are not generally recommended as good husbandry, but the performance data suggests that general management recommendations may be in need of re-evaluation.

Some problems involved in mixing animal populations of different ages, sizes, and exposures to microbes were shown when pairs of rats, varying in character and possessing a simplified microflora, were placed together in a single germ-free unit.⁵ Generally these rats sickened or died despite the fact that no organisms ordinarily recognized as pathogenic were present. The rapid exchange between rats of an unbalanced microbial flora apparently was too great a challenge for their body defense mechanisms.

Table 1—Comparison of Mortality and Weights in Pigs Farrowed in Central and Individual Houses

	Central houses		Individual houses	
	Early ¹	Late ¹	Early ²	Late ²
No. of litters	66	66	20	20
No. pigs farrowed alive	668	647	212	199
No. pigs at 56 days	575	562	177	161
Mortality at 56 days (%)	13.9	13.1	16.4	18.9
Av. 56-day wt.	45**	40	44	46
Av. 140-day wt.	174**	162	177	175

¹Early refers to 1st half of total farrowing period; late refers to latter half of total farrowing period.

**Student's "t" test with $P < 0.01$.

Comparisons have been made between pigs farrowed and raised in a central house and pigs raised in a temporary house, either by litters or by small groups of litters. Pigs raised in relative isolation in simple unheated shelters were healthier and less susceptible to bronchial pneumonia than those raised in a warm central pigery.⁶ At the Nebraska Station, a performance comparison was made between SPF pigs farrowed and raised in (1) semi-isolation and (2) confinement in a central pigery. The pasture-raised pigs had lower preweaning mortality, and heavier 56- and 140-day weights than the barn-raised pigs.⁷ Among equal numbers of sows farrowing in central housing and sows farrowing in individual units for 8 successive farrowings in the past 2 years, mortalities were approximately 20% for each group.² The pigs in the individual units averaged 4 lb. heavier at 56 days than centrally farrowed pigs. The necessity of specifying management conditions when comparing pig performances is emphasized by the fact that different results have been obtained when pigs have been raised under a variety of conditions.⁸

For starting hysterectomy-derived pigs, the isolation principle is an absolute necessity in the 1st weeks of life before the pig can produce his own antibodies. This isolation principle also appears to be beneficial for subsequent production. Isolation of small groups of pigs of similar age is apparently more important to production than the type of shelter provided.

Results from a cooperating farm tend to support this conclusion. During spring and fall of 1958, the average weight per pig for 5 litters of 45 and 47 pigs was 47 lb. and 45 lb., respectively, for 56-day weights, and 177 lb. and 185 lb., respectively, for 140-day weights.

During the spring of 1959, the number of litters was increased to 11. These pigs

used the same facilities as the pigs from the previous 5 litters used in 1958. Pigs from all litters were fed to market weight in one lot after weaning. The 117 pigs from 11 litters had an average weight of 41 lb. at 56 days and 151 lb. at 140 days. The 52 pigs from the 1st 5 litters averaged 11 lb. more at 56 days and 22 lb. more at 140 days than the 65 pigs in the last 6 litters. Because of this experience with poor post-weaning growth, the operator was encouraged to keep pigs for fall, 1959, from the same genetic stock in lots according to age and size. Three lots were set up for the 9 litters which consisted of 96 pigs. These pigs averaged 48.9 lb. at weaning and 190 lb. at 140 days. In analyzing the performance of pigs in these groups by lots, it was found that 56-day and 140-day weights for lot 1 were 53 and 188 lb.; for lot 2, 49 and 197 lb.; and for lot 3, 45 and 189 lb. Tests for parasites by fecal examination and at slaughter indicated that there was no serious parasite problem. Few ascarids and no lungworms were found. Despite the lack of a contemporary comparison, it appeared that allotment by size and age might be important in increasing average growth rate and decreasing variability in growth.

Based on the aforementioned results and discussion, the following management practices are recommended.

- 1) All litters that will share a common building should farrow within the shortest time possible to reduce the age and size range among the pigs.

- 2) A large farrowing operation should be subdivided by partitions, or separate houses should be used to reduce microbial transmission.

- 3) During the postweaning growth phase, attention should be given to allotment of pigs by age, size, and previous microbial experience.

Summary

A total of 1,726 crossbred SPF pigs from 172 litters have been considered in this

study. The performance of 132 litters farrowed and raised in central farrowing houses were compared with 40 litters farrowed and raised in individual houses. Pigs farrowed during the "early" half of any one farrowing period in central farrowing houses were significantly heavier at 56 and 140 days of age than those farrowed from the "late" litters in the same building during the same farrowing. There was no significant difference in the early or late groups farrowed in individual houses. Pigs farrowed in individual houses and fed to market weight according to age and size in groups of approximately 50 each grew more rapidly.

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Surgical Removal of Equine Uroliths via the Laparocystotomy Approach

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CYSTIC CALCULI occur rarely in horses. Of the 25,250 equine patients treated during the past 25 years in the Surgery Department of the New York State Veterinary College, 17 have had cystic calculi. According to records of the past 10 years, there were 7 cases of cystic calculi involving 4 geldings and 2 mares. The approximate ages of these horses ranged from 6 to 14 years. In 1 horse, there was a recurrence after surgical correction (Table 1). Of the 6 horses under discussion, 5 were chestnut-colored and 1 was a bay. There were 3 Thoroughbreds, 1 Standardbred, and 2 of mixed breeding.

Diagnostic Considerations

Clinical signs usually involved a combination of the following: dribbling of urine; frequent urination of small amounts; tenesmus for a variable number of minutes after voiding urine; passage of reddish, blood-tinged urine toward the end of micturition, this being more likely after a hard ride or race; inability to maintain condition; and, in geldings, hanging of the penis from the sheath in a flaccid state for minutes to hours with little passage of urine. In all horses, rectal examination revealed a hard, well-defined mass palpable within the bladder. In my experience, a 1- to 2-plus albumin rating and less than 200 WBC's, RBC's, or both per high powered (x 450) microscopic field were the only abnormalities encountered upon urinalysis. If bacteria are present or a bacterial cystitis is suspected, urine cultures and anti-

biotic sensitivity tests should be made. Ordinarily diagnosis is not difficult, because the owner does not notice any unusual signs until the stone is large enough to be readily palpable *per rectum*.

Etiology

Bladder calculi in horses frequently occur as a single calculus that weighs from a few ounces to a few pounds. They occur more often in geldings than in mares. They have been seen in stallions.² The lower incidence in mares can probably be explained by the fact that a mare has a short, easily dilatable urethra through which a small stone can pass unnoticed. That geldings and stallions seldom have trouble with urethral calculi is hard to explain because the urethra is comparatively narrow at the most proximal extrapelvic portion near the ischial arch.⁷ Ureteral calculi and renal calculi apparently are rare in horses.² Ureteral or renal calculi in horses were not diagnosed in the Department of Surgery Clinic in the past 25 years. Bladder stones cause a traumatic cystitis but are seldom associated with bacterial cystitis. Bacterial cystitis was not noticed in any of the horses listed in Table 1.

The cause of bladder calculi in horses is obscure. Some of the general etiologic principles for calculi formation such as irritation of the urinary tract, nidus formation, excessive concentration of urine, and high mineral diets may be applied to disease in horses with certain reservations. The horse, in contrast to most other domestic animals, normally has in its urine numerous calcium carbonate crystals. Because crystaluria is abnormal in urine of other animals and tends to predispose to stone formation, the horses should be expected

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Fig. 1—Self-retaining retractor.

to have urinary calculi more frequently than they do.

Surgical Technique

The object of this report is to discuss the surgical removal of equine cystic calculi by laparocystotomy. With the advent of antibiotics and improved aseptic technique, laparocystotomy has become practical.

This procedure offers certain advantages. The surgeon can see and use his hands within the bladder; the stone can be removed with less chance of leaving nuclei; there is no trauma to the urethra and minimal trauma to the bladder; the size and hardness of the stone are unlikely to be major problems; the chance of ascending bacterial infection from the urethra is minimized; the gross condition of the bladder can be ascertained; and the surgical incision may heal by 1st intention. On the

other hand, cystotomy requires general anesthesia and invasion of the abdominal cavity.

The major steps in the operation are: Withhold roughage for 36 hours prior to surgery and concentrates for 24 hours or less depending on the physical condition of the horse; evacuate the rectum of feces immediately prior to administering a general anesthetic that can be maintained for 2 hours. By means of ropes, secure a whipletree between the hocks and spread them slightly more than the width of the animal. By use of a hoist, elevate the hindquarters of the animal 18 to 24 inches from the ground. Placing the horse in dorsal recumbency on an inclined plane so that the abdominal viscera gravitates anteriorly and stretching the rear legs back to expose the ventral posterior abdominal wall would serve the same purpose.

The posterior portion of the exposed abdomen is prepared for surgery by clipping or shaving, washing with soap and water, and disinfecting. The area is draped, and a paramedian incision (left or right side is satisfactory) approximately 8 inches long is made starting just anterior to the prepubic tendon, at a point halfway between the midline and the medial commissure of the external inguinal ring. The incision is made obliquely toward the umbilicus. The abdominal tunic is incised, and the fibers of the rectus abdominal muscle are split manually. The peritoneum is incised. A self-retaining retractor (Fig. 1) is quite helpful in keeping the abdominal incision spread. The intestines are shielded with towels soaked in warm 0.9% saline solution. Two stay sutures of umbilical tape,

TABLE 1—Report of 7 Cases of Cystic Calculi in 6 Horses

Case No.	Breed	Sex	Age	Color	Surgery	Remarks
55-1098	Thoroughbred	Gelding	6 yr.	Chestnut	Urethrotomy	No recurrence after 1 yr.
56-20	Thoroughbred	Gelding	11 yr.	Chestnut	Urethrotomy	Re-operated on after 1 yr. for recurrence.
56-132	Standardbred	Female	4 yr.	Bay	Dilated urethra	No follow-up.
57-10	Thoroughbred	Gelding	12 yr.	Chestnut	Urethrotomy	See 56-20. Recurred for 3rd time. Horse euthanatized.
59-91	Thoroughbred	Female	7 yr.	Chestnut	Dilated urethra	Used for surgical practice. No necropsy.
59-1388	Saddle-type	Gelding	Approx. 14 yr.	Chestnut	Cystotomy	No recurrence after 18 months.
60-1368	Saddle-type	Gelding	Approx. 14 yr.	Chestnut	Cystotomy	A few grain-sized calculi palpable in bladder after 5 months; 1 friable calculus, 3 mm. in diameter, found at necropsy 6 months postoperatively.

1½ inches apart, are placed in the vertex of the bladder. An assistant holds these, thereby bringing the bladder close to the incision. The bladder is incised through the vertex in a ventrodorsal direction. The stone is removed after which the bladder may be explored for fragments of calculi or other abnormalities.

The method of closure of the bladder and the abdominal wall is a matter of preference. Number 0 chromic catgut in a simple continuous stitch is satisfactory for the mucosa of the bladder. The serosa and muscularis may be closed with a continuous Cushing stitch of No. 1 chromic catgut. The incision in the abdominal wall is parallel to the greatest tension plane so that, with the hindquarters elevated, closure is not difficult. Chromic catgut, No. 1 to No. 4, has been used successfully in either interrupted or continuous sutures. A nonabsorbable material should be used in the skin. Antibiotics such as crystalline penicillin may be applied inside the bladder and peritoneal cavity before closure, depending on the surgeon's judgment and on whether bacterial cystitis is present.

Postoperative care should include fluid intake to the point of diuresis, especially for the 1st few postoperative days. The surgeon may prefer to use antibiotics systemically for the first 3 or 4 postoperative days. Because the stones are usually composed of carbonates,¹ acidifying the urine would be helpful to prevent recurrence. However, a practical way to assure acidification of urine in a 1,000-lb. herbivore is problematical.

Discussion

In the past, the standard method for removal of equine cystic calculi has been by subischial urethrotomy. The danger to the life of the patient is not great, but the possibility of recurrence is a major and rather discouraging factor. When they recur, the calculi are multiple and appear 6 months to a year after the original surgery.² The recurrence is thought to be due to pieces of stone that are left in the bladder during the process of crushing and removing the calculus. These pieces act as a nidus for precipitation of salts and hence more calculi form. More recently, laparocystotomy has been reported by a number of workers.^{3-6,8,9}

The author has used a laparocystotomy on 2 geldings, and results have been gratifying. According to the owner, the first horse from which a calculus was removed in October, 1959, regained an apparently normal condition and seemed healthy 18 months postoperatively.

The 2nd horse was operated on in October, 1960, and was kept at the clinic for experimental purposes. Its poor physical condition at the time of surgery probably resulted from improper care as well as from the calculus. This gelding continued to dribble urine for the first 6 postoperative weeks. Improvement was gradual until normal urinary control was fully restored. In the first 4 postoperative months, he gained 100 lb. Five months postoperatively, several grain-sized calculi were palpated per rectum. Whether small stones were being passed at intervals or the rectal palpation was enough to break up the friable stones is unknown. The animal was euthanatized 6 months postoperatively. The incisions in the abdomen and bladder had healed completely. The mucosa of the bladder appeared smooth and nonhyperemic. One calculus, 3 mm. in diameter and friable, was found free within the bladder. It appeared small enough to pass through the urethra. Both horses were maintained on diets that included unlimited water, plus timothy, alfalfa, brome grass, native grass mixed hay, and whole oats with the addition of variable amounts of wheat bran.

Summary

Seventeen cases of cystic calculi have been diagnosed in 25,250 equine patients at the Surgery Clinic, New York State Veterinary College, during the past 25 years. Bladder calculi were removed surgically from 2 geldings by laparocystotomy. After 18 months, there was no evidence of clinical recurrence of the condition in 1 of these geldings. In the other, there were no clinical signs of recurrence when the horse was euthanatized 6 months after the operation, but a small friable calculus was found at necropsy.

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Diagnosis and Therapy of Agalactia Toxemia in Sows

A sow with agalactia toxemia characteristically appears normal and healthy and nurses her pigs for the 1st 24 hours after farrowing. Then lactation diminishes rapidly. The sow becomes listless, appears tired, and develops a fever and coprostasis. There is usually swelling of the udder, which begins at the hind sections and proceeds forward. The gait becomes stilted, tense, or staggering. In the skin, purple spots or cyanotic marks may appear and disappear intermittently. The maternal instinct weakens and the sow loses interest in the pigs. Sometimes she becomes semicomatose if hypoglycemia is present.

There is a significant increase in the erythrocyte sedimentation rate at 1 and 24 hours, reduced hemoglobin content, and reduced numbers of red and white blood cells. There is a decrease in neutrophils and eosinophils and an increase in lymphocytes. None of the signs are considered pathognomonic.

Treatment of 147 sows with agalactia toxemia over a period of 2 years was evaluated. The most successful therapeutic regimen consisted of injection of posterior pituitary hormones to stimulate ejection of milk, uterine contractions, and peristaltic tone in the intestinal tract; administration of broad-spectrum antibiotics, streptomycin, or injectable sulfonamides; and administration of prednisolone in doses of 50 to 100 mg., depending on severity, by deep intramuscular injection into the thigh. Prednisolone was considered especially helpful because it was instrumental in reducing the mortality of young pigs as well as aiding recovery of sows.—*Acta. Agric. Scand.*, 7, (1960): 33.

Effect of Neomycin on Experimentally Induced Anaplasmosis in Splenectomized Calves

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NUMEROUS DRUGS have been used in the treatment of acute *Anaplasma marginale* infection in cattle. Many of these have been used empirically without controlled criteria to evaluate results. As a result, many treatments based on the fact that cattle survived have been reported favorably. Survival alone is not valid as a criterion because many variables influence clinical anaplasmosis.¹

Since the only drugs proved specifically effective in anaplasmosis are the tetracyclines and since there were field reports indicating therapeutic effectiveness from the use of neomycin,² it was evaluated as a specific therapeutic agent for anaplasmosis.

One criterion which may be used to determine therapeutic effect is the percentage of erythrocytes containing marginal bodies. To be useful in the specific treatment of anaplasmosis, a drug must inhibit the production of or reduce the numbers of the causative agent and, subsequently, prevent anemia and other symptoms.² The marginal body is presumed to be the causative agent or is closely associated with the causative agent. Therefore, the effect that a drug has upon the marginal body count is a criterion for evaluating the drug.

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*Neomycin Sulfate, Veterinary Sterile Biosol, Upjohn Co., Kalamazoo, Mich.

Materials and Methods

The method of evaluation of neomycin's effectiveness was based upon its ability to inhibit or to prevent further increases of marginal body formation in the erythrocytes, which has been described previously by others.^{3,4}

Splenectomized calves between 2 and 6 months old were inoculated subcutaneously with a standard inoculum of 10 ml. of infected whole heparinized blood from a cow with acute anaplasmosis. The blood used as inoculum in this study contained from 28.0 to 31.4% infected erythrocytes.

Infection was determined by demonstration of marginal bodies in 1% or more of the erythrocytes upon staining by Giemsa's method. Blood counts and stained smears were made twice weekly after inoculation until infection was established. Blood counts and stained smears were made daily after treatment was begun to determine any alteration in the course of the disease as manifested by erythrocyte counts and percentage of erythrocytes containing marginal bodies.

Incubation time was determined as the interval, in days, from inoculation with infected blood until 1% or more of the erythrocytes contained marginal bodies as demonstrated with the Giemsa's staining procedure.

The percentage of erythrocytes containing marginal bodies varied from 5.0 to 48.2% at the time treatment was initiated.

There were 18 calves in the treated group and 18 calves which served as untreated controls.

Dosages and schedule of treatment are shown (Table 1).

TABLE 1—Neomycin Treatment of Experimentally Induced Anaplasmosis in Splenectomized Calves

Dosage rate in mg./lb. body weight	No. of calves treated	Route	Schedule of treatment (1 total dose plus):
6.0	1	i.v.	2 half doses b.i.d.
5.0	4	i.v.	2 half doses b.i.d.
4.0	1	i.v.	2 half doses b.i.d.
2.5	1	i.v.	2 half doses b.i.d.
2.0	5	i.v.	2 half doses b.i.d.
5.0	2	i.v.	1 total dose at 24 hr.
5.0	2	i.v.	.....
4.0	1	i.m.	2 half doses b.i.d.
4.15	1	i.v.	2 half doses b.i.d.

TABLE 2—Anaplasma Body Formation and Anemia Development in Calves Treated with Neomycin

Calf No.	Incub. time*	RBC count on incub. day**	Infected RBC (%)		Treatment begun PI† day	RBC count (thousands)					
			Start of treatment	Highest incidence reached		At start of treatment	PT‡ day		PI day		
							3	5	10	15	
801	11	9,500	18.0	26.5	2	9,500	.....	DPTD§ 5	.....	.....
802	28	8,350	20.2	52.8	5	7,400	3,750	1,450	DPTD 6	.....
803	25	9,150	48.2	57.4	5	4,350	1,700	DPTD 3	.....	.....
806	11	6,600	43.8	51.0	5	3,450	1,650	1,250	1,250	2,250	
807	8	7,200	38.4	64.5	6	6,125	1,450	1,500	6,600	1,325	
814	11	9,200	6.0	28.0	1	9,200	.....	.....	1,800	3,650
818	22	7,450	15.2	49.0	4	7,150	3,650	DPTD 4	.....	.....
821	11	6,220	13.5	47.0	2	6,210	3,750	2,250	DPTD 6	.....
823	15	7,100	24.0	26.4	5	4,250	1,675	1,050	4,250	1,050	
826	28	7,850	12.2	22.2	5	5,250	3,950	2,000	2,550	2,750	
850	12	9,500	6.5	38.0	2	9,100	8,450	5,100	kft|| PT day 5	.....
855	58	6,400	4.5	26.0	1	6,400	4,600	3,740	3,180	4,000	
858	6	9,500	32.0	69.5	3	9,500	5,200	2,400	kft PT day 6	.....
861	12	7,475	9.0	76.0	2	8,000	6,375	5,700	DPTD 6	.....
862	11	7,150	22.0	48.0	3	5,875	5,500	4,075	kft PT day 6	.....
863	12	7,200	5.0	55.0	2	7,875	7,225	6,300	DPTD 6	.....
865	11	8,300	22.0	80.0	3	7,175	6,300	3,550	DPTD 5	.....
940	11	6,360	30.5	70.0	3	6,556	5,100	4,025	kft PT day 5	.....

*Incubation time, days from inoculation to appearance of bodies in 1% or more of erythrocytes (positive diagnosis); **incubation day, the day positive diagnosis established, RBC count in thousands; †PI, postincubation; ‡PT, post-treatment; §DPTD, died post-treatment day; ||kft, killed for tissue studies.

Results

Neomycin administered to 18 splenectomized calves 2 and 6 months old failed to alter the development and course of experimentally induced anaplasmosis. The marginal body count continued to increase to peak incidences in an average of 8.2 days compared with 9.4 days in the untreated control calves. This difference is not a significant one and has been reported by others.¹

When treatment was begun, the percentage of infected erythrocytes varied from

5.0 to 48.2%, with an average of 21.2%. The post-treatment percentage of erythrocytes containing marginal bodies continued to increase and varied from 22.2 to 80.0%, with an average of 49.2%. Peak incidences of erythrocytes containing marginal bodies in the untreated calves varied from 23.5 to 91.5%, with an average of 54.8% (Table 2 and 3).

Erythrocyte counts, made during the course of the disease in the untreated calves, indicated a progressive anemia as observed on postincubation (PI) days 6, 8,

TABLE 3—Anaplasma Body Formation and Anemia Development in Untreated Calves

Calf No.	Incub. time*	Infected RBC (%)		RBC count (thousands)					
		At incub. day**	Highest incidence reached	PI† day					
				0	6	8	10	15	
804	12	1.0	41.0	8,200	7,050	6,100	4,725	1,300	
808	27	3.0	23.5	6,900	5,000	4,525	3,650	2,900	
822	22	2.4	52.1	8,200	5,050	1,300	DPTD 8	.....
824	9	2.0	30.0	8,200	4,440	3,550	2,500	2,600	
825	28	1.8	33.0	5,950	3,550	1,850	1,450	2,000	
832	14	1.4	40.0	6,600	4,700	2,100	1,625	DPTD 11	
837	13	2.4	46.2	7,900	6,100	3,500	1,400	2,650	
838	12	3.5	45.0	6,470	1,500	DPTD‡ 7	.....	.....
847	14	3.8	52.8	6,600	4,300	2,250	900	3,400	
848	14	2.0	49.6	9,800	6,400	3,400	.....	3,500	
853	13	6.0	33.3	6,800	3,100	1,590	DPTD 9	.....
864	14	1.0	43.0	9,800	7,500	7,160	3,150	2,610	
893	12	10.0	71.0	6,875	2,525	kft§ PI day 7	.....	.....
899	17	5.0	57.0	6,575	5,900	4,325	1,775	1,500	
927	26	6.5	87.0	6,525	1,600	1,350	1,600	2,300	
928	9	10.0	91.5	8,400	3,600	kft PI day 6	.....	.....
930	11	4.0	49.5	8,250	6,125	6,100	4,150	1,975	
937	11	4.5	75.0	6,950	2,650	1,400	1,825	3,200	

*Incubation time, days from inoculation to appearance of bodies in 1% or more of erythrocytes (positive diagnosis); **incubation day, day positive diagnosis established, RBC count in thousands; †PI, postincubation; ‡DPTD, died postincubation day; §kft, killed for tissue studies.

10, and 15 (Table 3). Erythrocytes in the treated calves indicated the same anemia development. These observations were made on post-treatment (PT) days 3 and 5, and PI days 10 and 15 (Table 2). Observations were made on PI days 6 and 8 (Table 3) so they would correspond to the same stage of the disease as the observations made on PT days 3 and 5 (Table 2).

An increased erythrocyte count on PI day 15 was noticed in a number of treated and untreated calves (Table 2 and 3). This represented the normal recovery pattern of calves that survived the acute disease.

Gross visual observations failed to indicate any differences in the rates of recovery from weight losses between the treated and untreated calves that survived.

Conclusion

Neomycin, administered intravenously and intramuscularly to 18 splenectomized

calves experimentally infected with *Anaplasma marginale*, did not inhibit the further formation of marginal bodies or reduce the number of erythrocytes containing marginal bodies; nor did it alter the course or severity of the disease as manifested by progressive anemia.

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Brucellosis Eradication Program Hits 80% Mark

The number of counties now participating in the nationwide brucellosis eradication program has passed the 80% mark, which means that 2,523 of the 3,152 counties in the United States and its territories are engaged in active eradication programs.

Just a little over 6 months ago, in October, only 75% of the nation's counties were participating. A year ago, the figure was 71%. If counties continue to request the program at this rate, the entire country could be participating in this cooperative eradication program within the next 2 years.—*USDA Press Release, June 19, 1961.*

A Review of Surgical Procedures for Correction of Vaginal Prolapses in Cattle

Robert E. Pierson, D.V.M.

ONCE A PROLAPSE has been successfully corrected, a cow should be salvaged by slaughter. This recommendation is made for the following reasons: (1) to avoid recurrence of the prolapse with further complications, and (2) to eliminate, because of possible hereditary factors, progeny which probably would not be good breeding stock.

The causes of vaginal prolapses are multiple, making treatment of this condition subject to considerable variation. The purpose of this report is to discuss the various surgical techniques for correction of vaginal prolapses and to evaluate the merits of each. Adequate knowledge of normal structures (Fig. 1) as well as their derangement in vaginal prolapse (Fig. 2) is necessary.

Methods of Correction

William's Modified Purse-String Suture Method.⁵—This technique (Fig. 3) is applicable for preparturient prolapses of the vagina where minimum straining is present. Two strands of linen tape or similar material about 14 in. long are needed. A loop is tied in the center of each strand. The free end of one of the sutures is threaded through a straight needle or a double curved spaying needle. The point of the needle is placed 2 inches lateral to the superior commissure of the vulva and then forced downward so that it emerges 2

inches lateral to the ventral commissure of the vulva. The 2 strands are then tied together leaving the ends free. The same procedure is repeated on the opposite side but with the point of the needle placed 2 inches lateral to the ventral commissure of the vulva. The needle is forced upward so that it emerges 2 inches lateral to the superior commissure of the vulva. The loops are then tied together as illustrated (Fig. 3).

Modified Caslick's Operation.—This method is used for the chronic vaginal prolapse in the postparturient cow (Fig. 4). A narrow section of the skin is removed from the dorsal 2/3 of the vulva at the margin of the commissure. A continuous or interrupted mattress suture is then used to reinforce the raw surfaces. This reduces the vulvar opening and prevents the vaginal wall from prolapsing.

Quill Suture Method.—This technique is valuable for either preparturient or postparturient cows in which there is excessive straining. Several strands of umbilical tape are inserted through the skin (Fig. 5) about 1 inch lateral to the vulva and 1/2 inch or more apart. The ends are tied over a quill, piece of cotton, roll of gauze, or rubber tubing placed on each side of the vulva parallel to the vulvar opening.

Shoelace Method.—This is one of the most popular and conventional methods for preventing the recurrence of the preparturient vaginal prolapse (Fig. 6). A series of interrupted sutures (usually a double strand of umbilical tape) are placed in the thick skin about 2 inches lateral to the lips of the vulva. The upper suture is placed so it extends above the superior commissure of the vulva. The lower suture is placed so it extends below the inferior

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commissure of the vulva. Two or 3 more sutures are placed midway between the upper and lower sutures. Strong bandage material is passed through the loops in both a horizontal and diagonal direction. The owner of the cow can be instructed to remove the bandage lacing just prior to parturition and to replace it following parturition to prevent postparturient prolapse. Also, repeated medication can be accomplished.

Buried Purse-String Method.—In cases of chronic vaginal prolapse, this method is useful (Fig. 7). A 5½-inch needle is threaded with about 2 ft. of ¾-inch umbilical tape. Starting just lateral to the inferior commissure of the vulva, the point of the needle is inserted deeply in a dorsal direction for 2 or 3 inches. The needle is pushed through the skin and then reinserted through the same opening. The vulva is circumvented with the suture. The tape is then cut to release the needle and the cut ends are tied together. In postparturient cases, the suture is not removed. Should this method be used on preparturient cases of vaginal prolapses, the suture should be removed just prior to parturition.

There are several advantages to the buried purse-string method: The suture (1) is hidden, (2) is durable and will usually prevent recurrence of the prolapse, and (3) is easily and quickly applied.

Crisscross Suture Method.—This is a comparatively new method for correction of vaginal prolapse (Fig. 8). It utilizes either ¾-inch umbilical tape or linen bandage suture crossed over the vulva. The dorsal end of each suture is passed through incisions in the skin halfway between the tuber ischii and tailhead. The ventral ends are passed through skin incisions on the back of the thigh 8 inches below the tuber ischii. Each suture is tied separately at opposite ends. In some cases, wide bandage material can be used rather than umbilical tape. I have not used this method so cannot evaluate its merits.

Minchev "Through-and-Through" Stay Suture Technique.—A technique for placing stay sutures through the lesser sciatic foramen was developed in Bulgaria (Fig. 9a). Epidural and local anesthesia around the lesser sciatic foramen is used to control straining and pain. After the prolapse has been replaced, a 14-inch double strand of umbilical tape (or stainless steel wire)

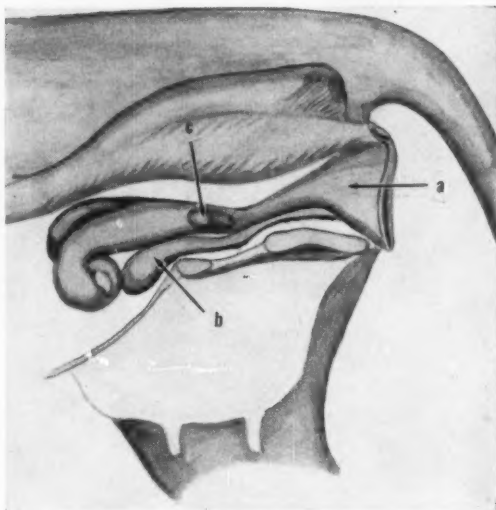


Fig. 1—Normal relationship of reproductive tract to pelvic canal: (a) vagina, (b) bladder, (c) window cut through vagina to show cervix.

is threaded through a double curved spaying needle or a straight 4- or 5-inch needle. A roll of gauze bandage or gauze sponges which have been impregnated with antiseptic is tied to the end of the suture. The needle is carried into the vagina by a gloved hand and is forced through the vaginal mucous membrane into the lesser sciatic foramen and through the skin. The

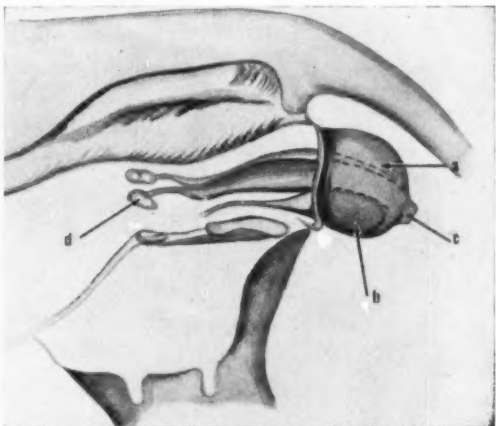


Fig. 2—Prolapsed vagina with the bladder contained within the prolapsed portion; (a) vagina, (b) bladder, (c) cervix, (d) ovary.

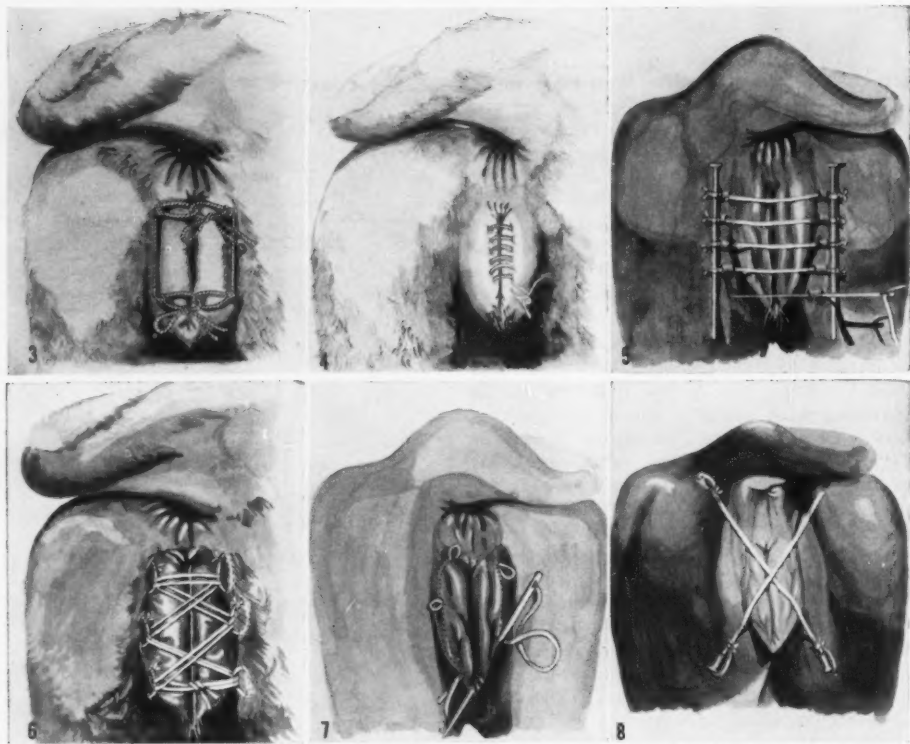


Fig. 3—William's modified purse-string suture method. Fig. 4—Modified Caslick's operation. Fig. 5—Quill suture method. Fig. 6—Shoelace method. Fig. 7—Buried purse-string method. Fig. 8—Crisscross suture method.

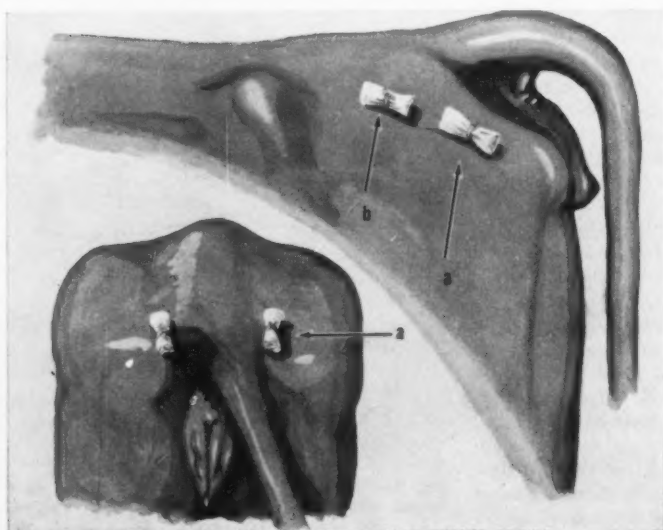
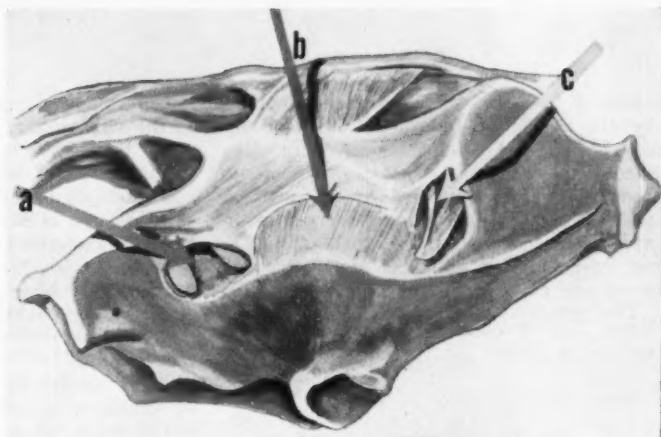


Fig. 9—Location of sutures in the Minchev "through-and-through" stay suture technique (a); location of sutures in the modified Minchev technique (b).

Fig. 10—Landmarks for modified "through-and-through" stay suture technique: (a) lesser sciatic ligament, (b) location for stay suture, (c) sciatic nerve.



needle is cut away and another roll of gauze bandage or sponges is tied securely in place with the suture on the exterior. The procedure is repeated on the opposite side. These sutures are left in place for 10 to 14 days, then removed. The purpose of the method is to establish adhesions around the stay sutures which will prevent further prolapse.

Modified Minchev Technique.—A modification² of the Minchev "through-and-through" stay suture technique can be performed by placing the stay sutures anterior to the lesser sciatic foramen (Fig. 9b). This has a decided advantage, because it reduces the chances of prolapse of the anterior part of the vagina. Landmarks for placing the stay sutures are necessary to avoid damaging the sciatic nerve (Fig. 10). By drawing an imaginary line from the tuber sacrale to the tuber ischii and then

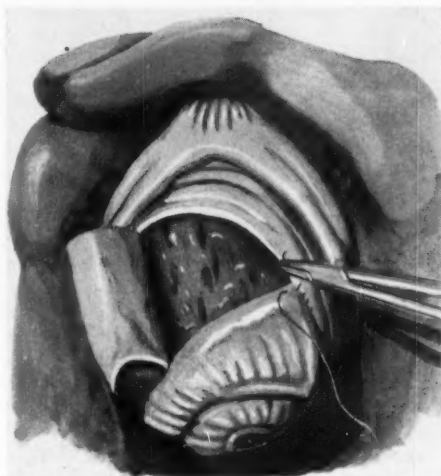
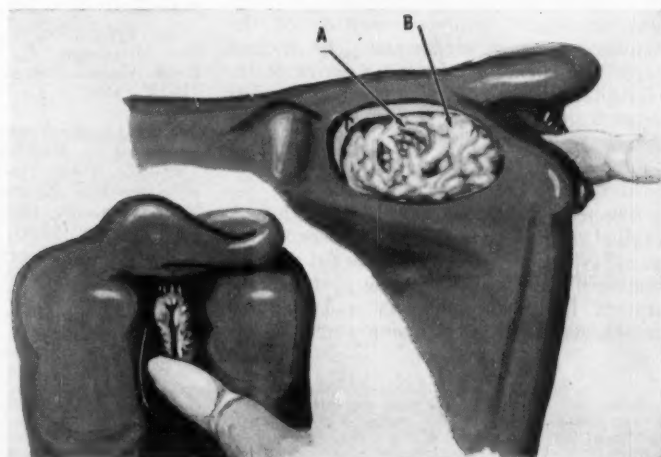


Fig. 11—Submucous resection technique.

Fig. 12—Removal of perivaginal fat: (a) gloved hand, (b) perivaginal fat, (c) diagrammatic "window" through skin and sacro-sciatic ligament.



bisecting the line, the location for inserting the needle is determined. The needle may be inserted from the skin surface inward through the sacrosciatic ligament or from the vagina outward. Care must be taken to avoid penetrating the rectum or injuring the sciatic nerve. Instead of using linen tape or stainless steel wire sutures, one may use metal vaginal skewers.

The technique has certain disadvantages:

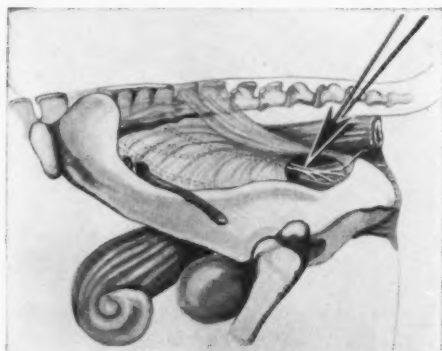


Fig. 13—Location for pudendal neurectomy (arrow).

(1) the cow may strain enough to pull the sutures through the vaginal mucous membrane and cause a fatal peritonitis; (2) the stay sutures may not be adequate for preventing prolapse of the vagina.

Submucous Resection Technique.—This technique³ is adaptable to chronic cases in which extensive necrosis and swelling of the vaginal mucous membrane is present. The procedure involves resection of the damaged mucous membrane. The incised edges are then united with a series of interrupted mattress or simple continuous sutures of chromic catgut (Fig. 11). The procedure is time consuming and is accompanied by much hemorrhage. It should be used only on selected cases.

Removal of Perivaginal Fat.—When a vaginal prolapse is due to an excessive quantity of perivaginal fat, the fat may be removed surgically. Following proper preparation for aseptic surgery and epidural anesthesia, a vertical incision 4 or 5 inches

long is made through the skin just lateral to the vulva (Fig. 12). Blunt dissection is used to break through the perivaginal fascia. The fat between the vaginal wall and the pelvis is removed manually. The skin incision is closed with interrupted sutures. Peritonitis or hematomas may occur occasionally.

Pudendal Neurectomy.—The operative site and preparation of the area for a pudendal neurectomy⁴ is the same as for the removal of the perivaginal fat. A vertical incision is made lateral and parallel to the vulva and sufficiently long to permit entry of the hand. By blunt dissection, the perivaginal fascia and fat are penetrated down to the internal pudendal nerve. The nerve may be palpated on the medial aspect of the sacrosciatic ligament posterior to the anterior pudic artery (Fig. 13). After the nerve is identified, it is transected by using 10-inch surgical scissors. Only one nerve (unilateral) needs to be transected. Complications such as peritonitis or hematomas may occur.

Conclusion

Many surgical procedures are used to correct vaginal prolapses in cattle. No one technique is greatly superior to another. Better techniques for handling chronic prolapses of the vagina are needed. In the opinion of the author, the purse-string technique is the preferred method for preventing chronic prolapse of the vagina in cattle.

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A Study of Anaplasmosis in Elk

George Post, M.S., and George M. Thomas, M.S.

WILD RUMINANTS have been considered as possible or potential reservoirs of anaplasmosis. Bovine anaplasmosis has been transmitted to Columbian black-tailed deer.¹ Latent anaplasmosis has been found in wild Columbian black-tailed deer and the *Anaplasma* organisms were transmitted to domestic calves by inoculation.⁴ *Anaplasma marginale* has been demonstrated in normal black-tailed deer for at least 11 months following experimental infection.²

The anaplasmosis complement-fixation (CF) tests employing bovine antigen were of questionable value when used to test serum from deer, elk, and bighorn sheep unless preliminary research including inoculation studies were done.³

Serum samples from 12 elk at the Wyoming Game and Fish Commission's Sibille Experimental Unit, Albany County; from 3 elk taken by hunters on Sheep Mountain, Albany County; and from 4 elk trapped on the Grey's River Feed Ground, Lincoln County, fixed complement in various degrees when bovine anaplasmosis antigen was used.

The purpose of this study was to determine if elk, whose serum samples were positive to the CF test employing bovine antigen, were carriers of anaplasmosis.

Procedure

From 12 elk, 4 years old, confined at the Sibille Experimental Unit, blood samples were collected on 3 occasions prior to inoculation studies. On examination of blood

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The authors thank Dr. J. F. Ryff and staff, Wyoming State Veterinary Laboratory, for performing splenectomies on experimental animals, for caring for the experimental animals, and for procuring infective blood for inoculation, and Dr. L. O. Mott, USDA, Animal Disease and Parasite Research Division, for advice on procedures in this study.

smears, *Anaplasma* bodies were not found. Complement-fixation test results are shown (Table 1).

Three calves, approximately 8 months old, and 3 sheep, from 4 to 6 years old, were obtained in the Laramie area. Rectal temperatures were taken twice daily; blood smears stained by Giemsa's method, CF tests, and packed cell volume (PCV), and hemoglobin determinations were made to establish the normal values for each animal. The data collected during this pre-splenectomy period indicated that the animals were normal.

The calves and sheep were then prepared for inoculation studies by surgical removal of the spleen. One calf died as a result of splenectomy. Twice daily temperature readings were continued. Stained blood slides were made, PCV and hemoglobin values determined, and CF tests performed 3 times weekly after splenectomy to assure that these animals were not infected. The animals were free of anaplasmosis during this preinoculation period.

Citrated blood from donor elk was pooled in 3 different ways, and 100 cc. was given intravenously to each of 3 sheep. Blood from 6 elk was pooled in 2 different ways,

TABLE 1—Complement-Fixation Test Results for Serum Samples from 12 Elk

Elk No.	Dates Samples taken		
	Sept. 14, 1959 (serum dil. 1/5*)	Oct. 15, 1959 (serum dil. 1/5*)	Nov. 4, 1959 (serum dil. 1/5*)
161	3+	.....	.....
158	4+	2+	2+
167	4+	3+	3+
155	3+	4+	4+
163	4+	4+	4+
153	3+	4+	4+
160	4+	4+	4+
162	3+	4+	4+
121	4+	4+	4+
123	3+	4+	4+
164	3+	4+	3+
122	4+	4+	3+

*Serum inactivated at 58 C. The readings were recorded as to degree of hemolysis. 4+ indicates no hemolysis; 3+, 2+, and 1+ indicate 25%, 50%, and 75% hemolysis, respectively.

TABLE 2—Source of Blood for Experimental Animals

Recipient animal		Donor elk No.					
Sheep No. 419	161	158	167	155	.....	.....	.....
Sheep No. 420	163	153	160	162	.....	.....	.....
Sheep No. 421	121	123	164	122	.....	.....	.....
Calf No. 416	158	167	155	163	153	160	160
Calf No. 417	162	121	123	164	122	161	.....

and 400 cc. was given intravenously to each calf (Table 2).

Temperature, blood, and serologic studies were continued during this postinoculation period.

A hemolytic reaction occurred in all calves and sheep after inoculation, which was probably due to interspecies reaction to the large volume of elk blood inoculum. Blood cells collected from the calves and sheep were extremely fragile. It was impossible to separate the serum without some hemolysis. Fifteen days after inoculation, serum samples from the 3 sheep were moderately to strongly positive to the CF test utilizing bovine antigen. The serum samples from the calves remained negative. Positive reactions were found in the sheep serum samples for 68 days, after which they were negative. *Anaplasma* bodies were not detected in either sheep or calves. Body temperatures were occasionally elevated and the PCV and hemoglobin levels dropped for approximately 15 days after inoculation, then gradually returned to normal.

The calves and sheep were then inoculated with known infective blood of bovine origin for the calves and of ovine origin for the sheep to determine the susceptibility of the animals to anaplasmosis. The calves developed acute signs, and laboratory findings were typical of anaplasmosis. Serum from calf 416 was positive to CF test 14 days after inoculation. Serum from calf 417 reacted positively beginning on post-inoculation day 16. On examination of blood smears from both calves, *Anaplasma* bodies were observed within 17 days. Calf

417 died near the end of the experiment. Calf 416 recovered and continued to have an antibody titer of 1/80 on the CF test.

There was no apparent effect on the 3 sheep when they were inoculated with infective blood from donor sheep. Body temperatures, PCV, hemoglobin values, and red blood cells remained normal. There were no reactions to CF tests.

Summary and Conclusion

The results obtained in this study indicate that elk blood, which reacted positively to complement-fixation (CF) tests employing bovine antigen, did not produce anaplasmosis in 2 calves inoculated. The calves proved to be susceptible to the infection as demonstrated by subsequent injection of blood from an anaplasmosis carrier animal.

The results obtained on the 3 sheep are inconclusive. Reactions to the CF tests were positive after they were given elk blood, for which there was no apparent explanation. *Anaplasma* bodies were not detected on stained blood slides, and no change in the packed cell volume was observed. After inoculation with known infective blood, there were no reactions to the CF test or symptomatically.

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Deigendesch's *Nachrichters Rossartzneybuchlein*

David L. Cowen, M.A.

THERE WERE a great many *Deutsche* in 18th century British America, *vornehmlich* in Pennsylvania. That most of these were German *Landsleute*—country people—is pointed up by the frequent publication of popular veterinary handbooks in the German language in that century and in the 1st 2 decades of the 19th century.*

With 2 exceptions,** all of these works were of the same popular, folksy kind. The first† of them was Johann Deigendesch's *Nachrichters oder nützliches und aufrichtiges Ross-Artzney Büchlein* published in Germantown in 1770. Deigendesch's work was also the largest (228 small pages) devoted to veterinary medicine and the most comprehensive; it contained fuller descriptions of diseases, more remedies, and some coverage of all farm animals. It was apparently extremely popular. First published in Freiburg in 1716, it was published in Germany and Switzerland many times thereafter, the last in 1857.‡ In America, the 1770 Germantown printing was followed by one in 1771 and one in 1791 with little change, and by one in Harrisburg in 1822 from a slightly different German original. The last was under the title of the *Nachrichters nützliches und aufrichtiges Pferd-Arzneybuch*. Finally, Deigendesch was more replete with folklore, superstition,

and magic than its American contemporaries and successors.

The Executioner-Veterinarian

There is a great deal to be learned about the history of veterinary medicine from Deigendesch's little book, and the lessons begin right on the title page. In translation, that page (Fig. 1) reads:

The Executioner's, or the useful and candid little Horse-Dispensatory, in which most of the internal diseases and external conditions of the horse are pointed out and described most clearly; together with the addition of the appropriate and most needed medicines and approved receipts required for any situation that may arise; [all] provided with clear directions. There are also taught several compositions one can make himself; in particular, the sympathetic powder and its application. To which there is further added an appendix on medicines for cattle, as also for sheep, sows, geese, and chickens; together with a serviceable index. All industriously brought together and prepared for publication by an executioner, Johannes Deigendesch.

Thus, the book immediately directs attention to the dovetailing of the occupation of the veterinarian with that of the public executioner-flogger, especially in Germany. Deigendesch, of whom little is known, claimed to have been executioner to the Imperial General Staff in 1697, and he wrote ostensibly for his fellow-workers, rather than for the country people directly.

The tradition of joining the 2 professions has been traced far back into the late Middle Ages§, and it continued well into the modern era. In 1714, 1720, and 1737, for example, the state examinations for public flogger in Brunswick (the executioner and flogger were often the same individual) tested also the applicant's knowledge of the structure of the animal body.

§Except as otherwise noted, the discussion of the executioner-veterinarian relationships that follows is derived from Froehner, R.: "Kulturgeschichte der Tierheilkunde." Terra-Verl., Konstanz, Vol. 2 (1954): 51-56, including the references to Hoenn.

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This study was supported by a grant from the Rutgers Research Council.

*At least 15 different titles, of which there were altogether about 25 separate issues, appeared between 1770 and 1820. The author will include a complete list of them in a forthcoming bibliography of American work pertaining to the materia medica before 1820, and he would be happy to answer any inquiries concerning them.

**Freitag and Rohlwe. See below.

†German almanacs dealt with veterinary matters even before the appearance of these handbooks. A study of "Medical Almanacs of the American Colonial Period" by Dr. Francisco Guerra, now awaiting publication, indicates that, from 1746 on, German almanacs regularly included sections on veterinary medicine.

‡Reutlingen, c. 1752; Tübingen, 1797, 1809, 1810; Leipzig, 1810; Basel, 1810; Reutlingen, 1834; Stuttgart, 1857.

Nachrichters :
Oder
Nützliches und aufrichtiges
Roß = Arzney-
Büchlein.

In welchem die meisten innerliche
 Kranckheiten und äußerliche Zustände
 der Roß aufs deutlichste beschrieben und
 erklaret werden :

Samt befügung der darzu gehörigen
 und nöthigsten Arzney-Mittel, und aprobirte
 Recepte was ein jeder Zustand wird nöthig
 haben, und mit deutlicher Anwei-
 sung versehen.

Auch wird gelehret einige Composita
 selbst zu machen, insonderheit das simpatici-
 sche Pulver und dessen Application.

Welchem annoch beygefüget ein
 Anhang von Rind-Viehs Arzneyen,
 Wie auch von Schafe, Sine, Gänse,
 se und Hühner, samt einem dienli-
 chen Register.

Alles mit Fleiß zusammen getragen, und in den
 Druck verfertigt
 von

Einem Scharffrichter
Johannes Deigendesch.

Ternantau: Zum dritten mal gedruckt und zu
 finden bey Peter Leibert, 1791.

Courtesy of the Rutgers University Library

Fig. 1—Title page of the 3rd printing of Deigendesch's *Ross-Artzney-Büchlein*.

In fact, this relationship between the executioner and veterinarian was still to be found in the 19th century even after the veterinarian was formally trained. One such veterinarian, in 1814, believed the state should provide every practicing veterinarian with an executioner's post. The executioner Franz Widmann, who executed the notorious assassin of Kotzebue (which assassination brought forth the reactionary Carlsbad Decrees in 1819) was a veterinarian.

The executioner-veterinarian was often subject to reproach and vilification. The role of executioner was an occupation usually considered as *unehrlich* (without honor), or at least *unsauber* (unclean). His concern with dead animals made him the butt of derision: e.g., a knife might be stuck in his door or a knacker's cart left at his gate.

Of more significance was the kind of indictment leveled by Georg P. Hoenn in his *Betrugs-Lexicon* (Lexicon of Deceits) in 1753: the flogger-veterinarian, without scientific background, prepared remedies for the treatment of men and animals; he took advantage of the incredulous and extracted money from them on the threat of hexing their animals; he arrogated unto himself a scientific knowledge of home remedies, specifics, and arcanas, which he actually only knew from hearsay or from old herbals and which he had not tested himself. Hoenn recommended that these "mountebanks" be prohibited from handling animals and bespoke the enforcement of every ordinance and regulation concerning remedies of a magical, unnatural, or superstitious kind.

There is ample evidence that Hoenn's opinion had considerable foundation in fact; therefore, it was no wonder that trained veterinarians opposed the practice by executioners and floggers. When schools of veterinary medicine were established in Germany late in the 18th and early in the 19th centuries, they had to overcome the bad repute into which veterinary practice had fallen because of the floggers.

Deigendesch was aware of this notoriety of the executioner-veterinarian. He was induced to write his book, he stated, by the knowledge that "many *Nachrichter*, more than others, have to suffer from the scorn of unbelieving and wicked people." It distressed him that "there are also often God-forsaken people, who, without cause, when God's power imposes a punishment or disease on the animal, place the blame on the honorable *Nachrichter* and attribute the cause to him."

But again, there is a good deal that supports Hoenn's indictment. Deigendesch disclaimed the help of other writers and contended that his work came out of his own knowledge and experience. In fact, it is suggestive of a collection of information and receipts which came out of a long family tradition. (It is interesting that, espe-

cially since the occupation was *unehrlich*, there was a great deal of intermarriage among the executioners' families. The office moved from father to son or son-in-law. The aforementioned 19th century executioner-veterinarian Widmann was the son of one executioner and the father of another. His mother and wife were both daughters of executioners. The Deigendesesch family was still living in Württemberg in 1863; its members were said to be "partly public whippers, partly veterinarians."*)

The Condition of Veterinary Art

If Deigendesesch's little book serves to call to mind the association of veterinary medicine with the executioner, it even more significantly illustrates the sorrier aspects of the state of the veterinary art in the early centuries of the modern age.

There was obviously a difference between the veterinary art as practiced by the countryman and the developing veterinary medicine of the more sophisticated scientific centers. Indeed, as one goes deeper into Deigendesesch, it becomes clear that the modern historian is too severe in castigating the Englishman Markham for "debas-ing veterinary practice to an incredible degree," by his "disgusting, cruel and atrocious cures."** Markham and Deigendesesch point out that veterinary medicine was a composite of ignorance, superstition, and folklore that had a long tradition in Europe, a tradition that they hardly created.

Deigendesesch's book had a deceptive, rational organization. Unlike other such works, it boasted an orderly arrangement by diseases and conditions, buttressed by a fairly useful index. Moreover, each disease was described in simple terms, and Deigendesesch seldom assumed that diseases could be recognized by their names.

Deigendesesch presented no great anatomical or physiologic knowledge. He did once mention postmortem dissection, but his approach made little pretense at scientific explanation. A reference to "full-bloodedness" as a cause of staggers in sheep and the contention that intestinal colic (*Darm-*

gicht) was caused by the forcing of the bilious part of the blood out of the veins into the intestines suggest perhaps a humoral pathology, but Deigendesesch's explanations were not so complex. One blamed certain conditions on the environment and improper care of the animal—for example, the itch in sheep came from "wet rainy weather when they have been overdriven

Wohl-eingerichtetes Arzney-Büchlein, wider die Krankheiten der Pferde, des Rindviehs, der Schweine, &c.



Aus den Schriften bewährter Ross- und anderer
Vieh-Ärzte zusammen getragen,
Und zum Dienst des gemeinen Mannes, insonderheit für
die Landleute, heraus gegeben.

Philadelphia, Gedruckt und zu finden bey Henrich
Miller, in der Zweyten-Strasse. 1771.

Courtesy of the Historical Society of Pennsylvania

Fig. 2—The 2nd title page of the *Wohl-eingerichtetes Vieh-Arznay-Buch* illustrates the 60 bloodletting sites of the horse.

*Schrader, G. W., and Haring, E.: "Biographisch-literarisches Lexicon der Tierärzte aller Zeiten und Länder." Ebner & Seubert, Stuttgart (1863): 98.

**General Sir Frederick Smith, quoted by Smithcors, J. F.: *Evolution of the Veterinary Art*. Veterinary Medicine Publishing Company, Kansas City, Mo., (1957): 192.

or heated up." By and large, all diseases were punishments from God, although the planets were not without influence, and those conditions which did not come naturally were the work of the devil or his instruments.

Therapeutics

Deigendesch's directions for cures ran the whole gamut of therapeutics: blood-letting, surgery, cautery, roweling, fumigation, medication of every variety and, especially, sympathetic magic and sheer superstition.

Venesection, as might be expected, was recommended by Deigendesch frequently (e.g., for hot and swollen eyes of the horse and for pancreas disease in cattle), most often by piercing the palate. But he warned against it at least once (for infected neck glands in cattle) and can hardly compete in goriness with the *Wohl-eingerichtetes Vieh-Arznei-Buch* (Well-Organized Animal Dispensatory) which commenced with an illustration of the 60 sites for bloodletting on the horse (Fig. 2) and a catalogue of diseases for which each site was to be used.*

Deigendesch expected the *Nachrichter*, and the publishers of the book expected the countryman, to be an expert with the fleam and did not hesitate to recommend its use. He directed that lampas be cut away with a sharp scissors. Hooks in the eye needed to be cut, he recommended, if the horse's head was greasy and swollen. This, he warned, really required an expert, but he did not hesitate to give specific directions.

Deigendesch not only recommended such relatively uncomplicated surgery, he advised more heroic measures also. For a horse with a dislocated shoulder, and a stiff leg, he gave the following directions:

Throw the horse to the ground and put it on its back and tie it well to the ground; then tie a strong rope around the sick foot at the fetters; throw the upper half over something tied down and not far away; tie the rope to a wheel of a wagon or cart, which must also be made secure; then turn the wheel and pull the rope on the foot taut. But there must be men along-side of the horse so that it cannot turn. Then a strong man places a knee on the dislocated spot, and gives it a strong push, or however he can best do it, so that it will be forced back to its right place.

The hot iron was recommended for such things as a ranula in the horse's mouth and galls on its foot or frog. But a much more common surgical procedure—and one that better illustrates the persistence of tradition—was the frequent use of the rowel or seton. Deigendesch recommended a leather rowel, a *Haarseil* (literally hairline), and, most often, the *Christ-Wurz*, i.e., black hellebore. The last was to be "stuck" into the animal and was recommended for horses, cattle, and swine, usually to draw out the "water" or "poison," and to create what in human therapy was called an "issue." His description of the application of the *Christ-Wurz* for heart failure of the horse was as follows:

When there is still hope, insert a *Christ-Wurz* or leather. One takes a piece of *Christ-Wurz*, puts it in good vinegar overnight, then takes a broad pair of tongs with a hole, fixes the hide in front of the breast well with them, and pierces the holes and the hide, with an awl, draws the *Christ-Wurz* through, twists it to both sides with thread, ties it so that it cannot fall out, and draws it back and forth two or more times a day.

Even more characteristic of the quality of Deigendesch's therapeutics, however, were fumigations and the use of herb-bags to "drive out the trouble." The smokes of dried cat dung, wormwood, camomile, and other odoriferous herbs were recommended. Little bags of herbs and other ingredients (e.g., mouse-ear herb and flowers, camin, elder, and dust from a woman's bier) were to be hung between the mane and the eyes or elsewhere as cures for such difficulties as headache and tetter in the horse.

Materia Medica

Deigendesch's materia medica was virtually limitless. Anything on the list of vegetable, animal, and mineral simples used in human therapy seemed to be included. Of course, herbs were found in great profusion and in all varieties. Such minerals as bole, alum, antimony, arsenic, and mercury were recommended. More remarkable, however, was his selection of medicines from the animal world—live insects, powder of roasted dog, roasted horse bones, ant eggs, pups, toads, and badgers hardly exhaust the list. The common use of the fat, blood, and excreta of a variety of species, man included, suggests that veterinary practice was affected by, and perhaps had influence upon, the German preoccupa-

*Pages 2-4; this work was published in Philadelphia in 1771.

tion with this class of drugs in the 17th century.**

In addition, Deigendesch found uses for a great many chemicals; sublimate of mercury, gunpowder, salamoniack, vitriol, red lead, ground glass (for blowing into the eye!), lye, and litharge of silver are among those listed. Again, these were for the most part the kind of remedies in human use and, in much of his materia medica, Deigendesch's recommendations were often of the same kind as used in human practice. (For example, the use of metals as caustics, styptics, and astringents; linseed as an external emollient and in poultices; camomile as an antiseptic and discutient; horehound for coughs; white vitriol in collyria. The use of lungwort in lung diseases of horses, cattle, and sheep, although then falling into disfavor in human practice, recalls the doctrine of signatures which influenced medical practice in earlier times.)

The tremendous armamentarium that Deigendesch called for would have taxed the capacity of any apothecary shop. (Although once he prescribed an *Elixir-Proprietatis*, Deigendesch never referred his readers to the apothecary's or doctor's shop.) Even were all the herbs available to the countryman, it was not likely that such exotic drugs as Armenian bole, "sealed earth," bier dust, not to mention theriac and mithridate, were available even at the shops in town. This accounts, perhaps, for the fact that Deigendesch would usually provide more than one remedy for an ailment. But the alternatives were not always very different, and the American publisher advised his countrymen that, since beech ash was not available here, hickory ash could be used and that wild grapevine ash would substitute for the German vine ash.

The publisher went on to offer an interesting commentary on the polypharmacy to which Deigendesch (not too extremely, it must be said) and all medical practice had been addicted.

Many herbs and roots will not be available, and the understanding person will not be bothered when one ingredient is lacking. Rather, when it is a long receipt, and it is not a major ingredient that is lacking, he can find his medicines from

among the materials on hand. If one has properly understood the herbs and roots . . . he will soon recognize when anything is lacking, what it is that can do the same work.

Folk Medicine

All of the foregoing hardly begins to describe the real character of the Deigendesch book. His was not simply an armamentarium; it was an arcanum of folk remedies, superstition, and magic.

Let us look at several illustrations of what might be called folk medicine. For broken wind in the horse, it was suggested that:

A hedgehog be roasted to ashes, and the ashes be given the horse with his fodder . . . [or] that one should put ants, together with all the filth one can get with them, into a bag, [then] place it in a kettle to boil. Let the horse drink from this.

For the horse who could not pass water, it was recommended that 3 lice be placed in his sheath, a remedy that, with variations, was apparently common.*

Sometimes, however, procedures were much more complex. For the tetter, it was recommended:

Early in the morning on the first day of the new moon give the horse, or whatever has the tetter, 5 lice in a little wax, in small pieces of bread, and see to it that everything is swallowed. On the second day give 7 and on the third 9, and the tetter will abate. *N.B.* The lice must however be obtained from a boy who is not yet 7 years old.

A horse's tendons could be loosened with a liniment made 1st by boiling 3 pups 8 or 9 days old, 3 handfuls of earthworms, 20 red snails, and 2 herbs in water and wine, then straining this and adding salve and oils.

Obviously, the folk remedy was an earthy sort of thing and, indeed, it often became crude and coarse. The countrymen who followed directions, when a horse was badly constipated, to "cover your hand with olive oil or soap, reach as far as you can into the rectum, and draw out the waste," would have little compunction in following directions to urinate into the mouth of the sheep in which blisters had just been opened.

*The "Wohl-eingerichtetes etc." (page 84) recommended the use of a louse, bedbug, or gnat, and the sheath closed up.

**T. J. Wecker in his popular "Aütidotarium Generale" devoted a special chapter to excrements, and the physician Paulini published a whole work aptly named "Dreckapotheke" in 1696. See, Kremers, E., and Urdang, G.: History of Pharmacy. 2nd ed. J. B. Lippincott Co., Philadelphia (1951): 125.

Superstition

Perhaps some of these remedies would do no harm, and perhaps others could do some good, but the rationale behind such folklore is sometimes difficult to fathom. Even more intriguing are the outright superstitions that were recounted. No cow that had miscarried should be permitted to catch a glimpse of the fetus; if she did she would die. The 1st sheep to be stricken with St. Anthony's fire must be buried alive, feet up, in front of the sheep pen. To relieve swollen udders, one only had to get an old hag to pass the hem of her skirt over them. And as soon as one perceived the *Friesel* (purples, *purpura*?) in a horse, he was to pass water into the right shoe and pour it into the horse's left ear.

Thus, it is not surprising that certain remedies were to be prepared and administered only on certain days and at certain times. Ancient astrological beliefs are indicated in the references to the signs of the Zodiac—Leo, Virgo, and Cancer. The phase of the moon was also particularly significant, and a certain remedy was to be given only on 3 consecutive Fridays. Perhaps the mixture of ordinary superstition and astrological forces is best illustrated by another suggestion of Deigendesch for the tetter:

This can be used for hanging [on the horse in a bag]: gather mouse-ear grass with the small yellow flowers and camin on St. John's Day when the clock strikes 12. Then, 3 days before the new moon, early in the morning, dig elderroot and take the rind of it off. Take this and an equal amount of [powder] from the bier in which a woman has lain, and use them to make a little bundle. Hang it on the faltering limb early in the morning in the waning of the moon. You can rely on it that this will take away the tetter.

Magic

The line dividing superstition from magic is not distinct, and Deigendesch offered numerous cures that depended essentially on sympathetic magic, that is, the transference of the ailment or the evil to something else. In this category can be placed the thong of human skin that he recommended be tied around the foot of the horse to prevent the tetter or the cramp. Similarly, if one could get the rope with which a condemned criminal had been hung and bind it about the body of the horse, it would stop intestinal colic. More common

was the sympathetic treatment that required one to:

take flea-bane and soak it in fresh water. Then put it on [the horse's] sores and let it get warm. Then bury it in a moist place, or under the eaves, and some believe that the sores will heal as the herb rots.

Deigendesch was very proud of his sympathetic powder, as the title page indicates. His directions for it are perhaps illustrative of the character, in style and content, of the whole book.

I will here reveal, out of affection and an open heart, the sympathetic powder. With it you can completely heal a clean sore without much effort and cost. (I might also recall that a smith had paid a *Duplone* for this receipt.)

Take Roman and Hungarian vitriol, as much as you like. In June or July put it into an earthen or wooden vessel, and place it in a spot where the sun shines warmly. At night, or in uncertain weather, keep it in a dry place. Continue this as long as it takes the vitriol to become white and calcined, in the meantime stirring it often with a wooden mixer. Some would recommend that one should take as much gum tragacanth, especially in July when the sun goes into Leo, which happens on about the 13th, and place it in the sun with the vitriol, and leave it there for four weeks, until the sun moves into Virgo, which occurs on about the 13th of August. This, however, is not really essential here. When the vitriol has become nicely white and calcined, put it into a glass and keep it in a dry place until needed.

When you want to heal a clean sore or wound, wet a linen cloth with the blood or fluid of the sore, then cover the cloth with the [sympathetic] powder and put the cloth in a temperate place, which is neither too cold nor too warm. Continue this mornings and evenings. When the sore is wide, cover it with a cloth, remove it, cover it with powder, and proceed as above.

When, however, the sore is rather dry, and it is apparent that it is necessary that it should fester more, then put the cloth together with the powder in a damp place. However, if the sore is too wet, one puts the cloth and the powder in a dry spot. If one must, however, cut the sore, slip the cloth dry into the cavity. On taking it out shake powder over it, and continue this until the cure has been affected.

This powder was to be applied not to the beast's sores or wounds, but to rags, after they had been seeped in the blood or matter oozing out of the wound!

Still another kind of sympathetic magic—common enough to be found elsewhere*—was offered by Deigendesch. As part of a

*[Schneyder, J.] Nützliches und bewährt befundenes Rossarzney-Büchlein. Baumann, Ephrata (1805): 19-20.

rather complex cure for the tetter, Deigendesch also recommended that one:

Take from [the horse's] fore-top, withers, tail, the hoof's edge, and all four feet as much hair as you can pull out with three fingers. Put it together and roll it up in a paper. Then take a drill and bore a hole at sunrise, in a young apple, juniper, or field-tree. Place the above in it, and hit a peg into the hole, rub bark and earth over it, and go away. N.B. . . . all should be done on the third day after the new moon, early in the morning, and the hole must be bored to the heart [of the tree].

Enchantments

Magic was presumed a natural phenomenon, and the practitioner could handle it. Black magic, necromancy, and witchcraft, however, were of a different kind, and here the ordinary practitioner had little to offer. Indeed, the German countryman was said to call in the flogger, the smith, the marshall, and the veterinarian, more or less in that order; when all of their art failed, then would he call in the hexmaster.**

Perhaps this accounts for the fact that there is a bare minimum of *Hexerei* and witchcraft in Deigendesch. He offered a single section on sicknesses of the horse due to enchantments, which began with the comment:

that the horse is not bewitched now and then, or as one used to say, seized by evil people, is not to be denied, but rather much more to be affirmed, and many had been brought to poverty by their levity in regard to this.

His description of a bewitched horse was as follows:

When a horse is bewitched, it stands very sadly, hangs his head in the manger, and sweats all the time. When it is strongly seized, it falls down and rights itself wretchedly. If it is forced up, it cannot bring its feet up well. Finally its jaw stands up and everything changes as above for the stag-eil [tetanus] from which it is difficult to distinguish.

For this, Deigendesch first recommended a brew of valerian, rue, creeping thyme, juniper berries, and saffron. Then, he recommended an ointment of rue-oil and a fumigation made from a compound of valerian root (dug on a Friday morning before daybreak), St. John's wort, black coriander, mastic, myrrh, asafoetida, and camphor. Still other recommendations were

made including a powder with human bone shavings as an ingredient, and pouring the water of prepared unicorn into the horse's ears.

To forestall enchantment, the procedure was simple: "one must leave the dung lie in the stall on Wednesday and Friday, and not clean it out."

In addition, Deigendesch recognized that the milk might be taken from a cow by enchantment and hexing. For this, he also offered a series of remedies, one of which will suffice to illustrate the techniques used.

Take the milk which the cow still gives, put it on the fire in a pan and put in a handful of chimney-black, and let it boil up three times. Then extinguish a pair of glowing *Sichlen* [probably a weed] in it, place the milk in a swine-bladder and hang it in the smoke in the chimney.

Diegendesch commented that he would be hurt "in the heart and soul," if his book were to fall into the hands of scorners. Lest we scorn too much, it is worth remembering that most of the absurdities and crudities to be found in his book have counterparts in the work of most of his contemporaries and even of later competitors, and that they were practiced not only in Germany.† It is but a commentary on the times to point out that Deigendesch was a very popular author, probably, as Schrader and Haring have said, because of rather than despite the superstitions his work contained.‡

Nor is the conclusion warranted that veterinary medicine had not made strides in the half century between the 1st and last publication of Deigendesch's *Büchlein* in America. Eberhard Freitag, a "regular physician and apothecary at Bethlehem,"§ set the new tone when he wrote in the preface to his *Der Deutsche Pferd Arzt* (*The German Horse Doctor*) (Easton, 1809): "Many people have asked me if I do not have certain remedies that one can place in the stall, or hang on the horse, that will always keep him healthy. The answer is always, and will always remain: take good care of your horse, that is the best means of preservation." And it is appropriate to

†Davidson, T. D.: A Survey of Some British Veterinary Folklore. *Bull. Hist. Med.* (1960): 34,199-222; and Davidson, T. D.: Cure of Elf Disease in Animals. *J. Hist. Med. & All. Sci.* (1960): 15,282-291.

‡Schrader and Haring, page 98.

§Levering, A.: A History of Bethlehem Pennsylvania. Times Publishing Company, Bethlehem (1903): 54.

**Leoprechting, K. v.: "Aus dem Lechrain," 1 Teil. Reprint, Verlag "Bücher d Heimat," Altrötting (1947): 29-30.

add that the last of the handbooks of this era was by Johann Nicholas Rohlwes. Rohlwes was a trained veterinarian, who practiced, taught, and wrote prolifically in Germany in the early 19th century. His *Vollständiges Gäuls-Doctor Buch (Complete Horse-Doctor Book)* (Reading, 1817) re-

flected the professional spirit that earned him "everlasting fame" in veterinary medicine* and represents something of a milestone in the history of American veterinary medicine.

*Schrader and Haring, pages 359-361.

Propolis Therapy for Foot-and-Mouth Disease

According to research workers at the Kazan Veterinary Institute in Russia, preparations of propolis (bee glue) ointment have high bactericidal and anesthetic properties. This agent has been applied in the form of a 5 to 10% ointment to treat lesions of foot-and-mouth disease in cattle. In contrast to zinc oxide ointment, camphorated oil, and tar, it gave good therapeutic results, with rapid healing of defects in the skin and mucous membranes without scarring or suppuration.

The drug was reported to have a stimulating effect upon tissue regeneration and enabled recovery of animals $1\frac{1}{2}$ to 2 times faster than conventional agents.—*Veterinaria*, 38, (1961).

Canine Helminthiasis, a Zoonosis of Growing Importance

Of 1,707 adult dogs and cats examined for intestinal helminths over a period of 4 years, about half harbored helminths transmissible to man. The 2 types of infections in man of particular concern were cutaneous larva migrans and visceral larva migrans. The cutaneous involvements were most generally due to infective hookworm larvae, such as *Ancylostoma braziliense*, *Ancylostoma caninum*, and *Uncinaria stenocephala*. The visceral type was due to the roundworms *Toxocara canis* and *Toxocara cati*. Because of the defecation habits of dogs and cats, unsanitary hand-to-mouth habits of children, and the trend toward suburbanization, the growing number of pets may result in an increase in larva migrans in man.—*New York State J. Med.*, 60, (Oct. 15, 1960): 3239.

Editorial

Shaken Confidence or Healthy Skepticism?

At a recent meeting, a veterinarian in the audience asked a speaker representing the government agency responsible for licensing biological products "What per cent of the biological products now used by veterinarians are worthless?" The obvious and only reasonable answer the speaker could give was "None are worthless."

We may agree or disagree with the answer given, depending on our interpretation of the word "worthless." But more important is the reason why the question was raised at all. Is this an indication of lack of confidence on the part of the veterinarian-consumer?

There are several reasons why confidence in veterinary drugs may have been shaken: the adverse publicity given to medical products generally by the Kefauver investigations; the growing realization that standards set by the ARS for some biological products are minimal or outdated; and reports of immunologic inadequacy of certain veterinary products. However, the undiminishing volume of sales reported by most veterinary firms seems to indicate

that confidence in biological products on the part of the veterinarian-consumer remains at a reasonably high level. Furthermore, the apparent success of veterinarians in practice seems to prove that most such products are performing satisfactorily.

What may seem to be a lack of confidence at first glance is more likely a healthy skepticism, characteristic of users of any products, especially medical ones. Hardly anyone practicing veterinary medicine obtains 100% satisfaction with his immunization techniques, and it is tempting, though illogical many times, to blame the vaccine when immunization failures occur. Reasons for immunization failures unrelated to effectiveness of vaccines are well known and are too numerous to mention here.

We should be concerned if there exists a real lack of confidence, but we should be doubly concerned if this healthy skepticism is lost. It is a prime force in stimulating continued production of high quality immunizing agents and in making our competitive system work.—A. F.

The Executioner-Veterinarian

Because most readers of the JOURNAL are practitioners, there is widespread feeling that "practical" articles should have top priority. Few would agree that historical reports command much interest.

Yet, a knowledge of veterinary historical events and personalities can and does add to the sum total of a man's professional as well as intellectual character. Such knowledge imbues him with depth and perspective, permitting him to regard his professional significance with a sincere respect not shared by his less well-indoctrinated colleagues. Just as physicians recognize and appreciate the stature attained by their profession since the practice of medicine was in the hands of the sorcerer, and later the barber, so can veterinarians appreciate the stature attained by their profession since the days of the farrier and the town executioner.

We are concerned here with the executioner as an historical veterinary antecedent. In the early days of veterinary medicine, in Germany at least, the executioner, the public flogger, and the veterinarian were one and the same. The therapeutics, *materia medica*, folk medicine, superstition, and magic common to the treatment of domestic animals in those days, almost incomprehensible in the light of today's highly developed biomedical and scientific achievements, are well worth knowing. For those who feel that their chosen profession means more than diagnosis and treatment of animal diseases, and more than a means of livelihood, the authentic and interestingly written article, "Deigendesch's *Nachrichters Rossartzneybüchlein*" beginning on page 359 in this issue is recommended reading.

New Books

Radioactive Isotopes in Biochemistry

It is a pleasure to see this valuable work translated from the German. The author has been an active contributor in the field of radiochemistry since the beginning of the rapidly developing period of tracer technology. The work reflects his substantial knowledge of the field. It amazes one to see the number and scope of scientific publications and articles that the author has studied and has included in the references. If for no other reason, this book as a review of the art deserves a place on the laboratory desk of any research veterinarian who uses or plans to use tracer techniques in his work. Its purpose is to serve as a source book for techniques and equipment and this it does very well.

A criticism of the book is that the latest references cited are 2 years old and they are added without assimilation into the orig-

inal presentations. Those references as derived from the German document are not less than 3 years old. It is unfortunate that there was such a lag between the production of the original manuscript and the translation. A consequence is that some of the more recent and more advanced tracer techniques such as tritium labeling and autoradiography are not adequately covered. The translator, Dr. Peter Oesper, deserves special credit for a job well done.

In spite of the shortcomings, this book is among the best in the field of tracer technology.—[*Radioactive Isotopes in Biochemistry*. By E. Broda, translated from the original German text, *Radioaktive Isotope in der Biochemie*, by Oesper, P. 1st English ed. 331 pages; illustrated. Elsevier Publishing Co., Amsterdam, 1960. Price 30 shillings (\$4.20).]—JOHN H. RUST.

Laboratory Handbook of Veterinary Diagnostic Procedures

At first glance, this would appear to be a useful aid to the laboratory diagnostician required to go beyond his routine procedures for assistance in the diagnosis of such diseases as anthrax or glanders. Close examination of more familiar procedures reveals a combination of trivial, presumptive, and more exact examinations that must be weighed in importance by the diagnostician. Under brucellosis, our familiar plate-agglutination test is omitted entirely, and serum titers are interpreted differently than in the United States; blood, Sabouraud's, and MacConkey's agar mediums alone are described for bovine and ovine abortion examinations; intracerebral and conjunctival sac inoculations of rabbits are not mentioned under listeriosis; rabies diagnosis is considered only from the histopathologic angle; serologic procedures are dispensed with in leptospirosis; many parasitologists would prefer a method of concentrating ova from fecal specimens and would want to place intestinal parasites in warm alcohol rather than using

formalin for fixation. These are only some of the specific points that could be improved.

As a whole, the booklet is a step in the right direction, for there is an obvious need for a compilation and evaluation of tests required in the diagnosis of animal diseases. The author is to be commended for taking the initial step and summarizing a great deal of material, frequently within the limits of a table. It is hoped that future issues will benefit by closer editing, departure from the student outline format, statement of an understandable minimal procedure with broader coverage of alternative tests, omission of the limited sections on biochemistry and toxicology, an indication as to where the mentioned antisera and other material may be obtained, and the inclusion of more diseases.—[*A Laboratory Handbook of Veterinary Diagnostic Procedures*. Compiled by A. J. Stevens. 70 pages; mimeo. Animal Health Branch Monograph No. 3, FAO, United Nations, Rome, Italy. 1961. Price not given.]—J. F. RYFF.

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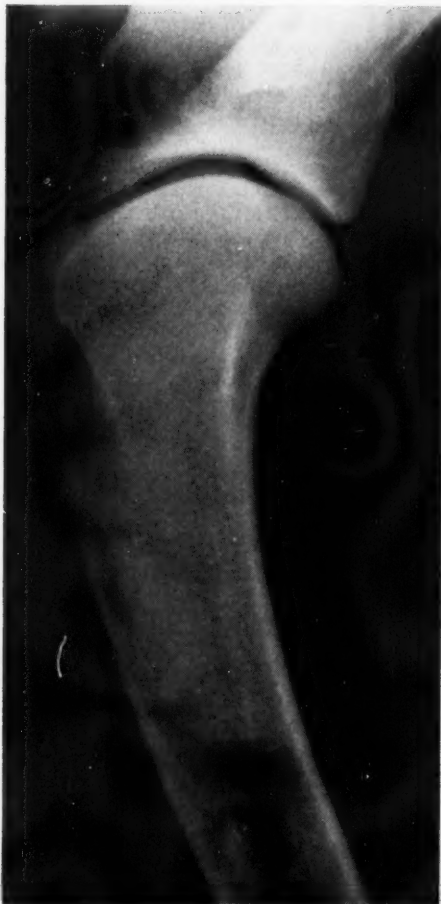
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WHAT IS YOUR *Diagnosis?*

.....
Make your diagnosis from the pictures below—then turn the page ▶



History.—A female German Shepherd Dog, 10 years old, had difficulty walking. All 4 limbs seemed to be affected, but there was no visible enlargement of any of the joints. Radiographs of all the joints were taken and a slight degree of dysplasia and extensive osteoarthritis of the hip joints were seen. Radiographs of the shoulder joints (Fig. 1) failed to reveal any abnormality, but at necropsy there were extensive lesions (Fig. 2) of the humeral surfaces of both shoulder joints.

◀
Fig. 1—Radiograph of dog's shoulder joint.



Fig. 2—Circumscribed lesions in the cartilage can be seen on heads of both humeruses.

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Focal necrosis, due to pressure, of the humeral articular surfaces of the shoulder joints.

Comment.—Shoulder lesions of this type are a frequent necropsy finding in old dogs

of large breeds but are not detectable radiographically because they involve only the cartilage, which is normally translucent. The lesions closely resemble those of osteochondritis dissecans but differ histologically due to confinement to the depth of the cartilage; in osteochondritis dissecans, an area of subchondral bone is involved in addition to the cartilage. Osteochondritis dissecans is detectable radiographically because it contains bone.

Cartilaginous erosion (Fig. 2) is the result of marked compression of the opposing joint surfaces at a specific area.^{1,2} It is common for old, partially blind dogs to stand staring into space for long periods, supporting most of their weight on their front legs. The shoulder joint space is compressed; the synovium, essential for lubrication and preservation of cartilage cells, is displaced; and focal necrosis of the surface cartilage occurs due to pressure. The weight of the dog, plus the long periods of standing and staring, are contributing factors.

The sagittal section (Fig. 3) shows that the cartilage cells on the surface are eroded and that the deep layers contain fissures extending almost to the subchondral bone; but the destruction has not extended enough to involve the bone or to increase the density of the trabeculation of the subchondral plate.

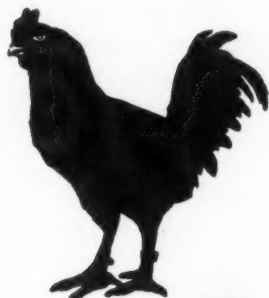
References

- ¹Bennett, G. A., Waine, H., and Bauer, W.: Changes in the Knee at Various Ages. The Commonwealth Fund, New York, N.Y., 1942.
- ²Salter, R. B., and Field, P.: The Effects of Continuous Compression on Living Articular Cartilage. *J. Bone & Joint Surg.*, 42A, (Jan., 1960): 30-49.

This case report was prepared by Wayne H. Riser, D.V.M., M.S., Kensington, Md.



Fig. 3—Histologic sagittal section with area of cartilaginous erosion (arrow). Notice that the lesion does not extend through the cartilage.



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Ninety-Eighth Annual AVMA Meeting

August 20-24, 1961 — Detroit, Michigan

Convention Preview—Capsule Report

The heart of any veterinary convention is the scientific program. The 98th Annual Meeting to be held in Detroit this year is no exception. No matter what phase of veterinary medicine you may be concerned with, there will be some parts of the program that will appeal to your special field of interest.

The Scientific Program

For those engaged in large animal practice, there are approximately 30 presentations directly concerned with large animal medicine. Excellent practical as well as scientific discussions concerning SPF pigs will be offered. Dr. George A. Young of Lincoln, Neb., will describe on-farm performances of SPF pigs; Dr. L. R. Gallentine of Gilman, Iowa, will discuss his experiences in providing veterinary service for SPF swine herds.

For those interested in cattle diseases, there will be a number of useful and practical demonstrations and discussions on diagnosing abomasal displacement, correcting vaginal prolapses, applying restraint techniques, evaluating bull semen, and analyzing virus aspects of shipping fever. Dr. J. J. Crouch of Glasgow, Ky., will describe his "drive-in" cattle practice and how it

has affected his practice costs and income.

The equine practitioners have not been overlooked. Nearly 10% of the presentations will be directly concerned with equine veterinary medical problems. Dr. F. J. Milne of Guelph, Ont., will describe methods of performing abdominal surgery. Dr. Albert A. Gabel of Columbus, Ohio, will relate experiences with use of promazine, chloral hydrate, and ultra-short-acting anesthesia in the horse. Control of equine parasites using a variety of the parasitocides will be described by Dr. J. H. Drudge of Lexington, Ky.

Other topics of a more general nature pertaining to such things as "A look inside our group practice" by Dr. Ralph B. Lind of Canton, Ohio, a motion picture on telephone management, and a discussion of business management of veterinary practice should prove extremely informative to practitioners generally.

Small animal practitioners will be able to take advantage of an entire half-day session devoted to medical problems of the respiratory system of small animals. Closed-circuit television will be utilized to provide adequate viewing of techniques demonstrated. Methods of clinical examination, ventilation procedures, problems in brachycephalic breeds, radiographic examination, therapeutic principles, and surgical tech-

◀ This bridge spans busy Detroit River, linking the AVMA Convention City and Canada.

niques will be described by several veterinarians with a wealth of practical experience. In addition, there will be presentations on special subjects such as tissue stapling techniques, correction of faulty ear carriage in erect-eared dogs, collection of small accounts, and interpretation of leukocyte responses to diseases in animals.

For those interested in the more scientific aspects of veterinary medicine, there is a section on research. Fluorescent antibody tests for rabies, pathogenesis of *Leptospira pomona* infections in pregnant heifers, rabies problems in cats, studies on myoclonia congenita in pigs, experimental analysis of radial-paralysis in dogs, experimental swine leptospirosis, and methods of treating hemorrhagic shock during pentobarbital anesthesia will be discussed during the two days of research sessions. Of special interest to research workers will be the presentation "Design Considerations for Experimental and Clinical Studies" by Spencer M. Free of Philadelphia, Pa.

Sections on public health and regulatory veterinary medicine will have a unique feature in the form of a symposium on the diagnosis of diseases of laboratory rodents. The symposium, organized with the cooperation of the American Board of Laboratory Animal Medicine, is believed to be the first of its kind. Also to be discussed in this portion of the program will be the threat of foreign animal diseases, the present status of bovine tuberculosis research, the role of the veterinarian in nuclear warfare, the assessment of damage to livestock from radioactive fallout, and problems created by modern developments in transportation.

Poultry diseases will be featured in a two-day session involving 17 separate presentations. Problems of poultry inspection and condemnations will be featured, and discussions of infectious bronchitis, ornithosis, leukosis, laryngotracheitis, avian encephalomyelitis, bacterial endocarditis, and parasitoses will be presented.

The Social Side

According to a survey made last year, following the Annual Meeting in Denver,

it was found that social events and visiting with colleagues were considered by many to be the high point of the meeting. Socializing will undoubtedly be important to the meeting in Detroit, also. Visiting friends at the exhibit booths, at the friendship (hospitality) room, at class reunions, and at alumni dinners can't be done anywhere else as well as at the Annual Meeting. For those who like to extend their social activities beyond the convention halls, there is the annual golf tournament and the sights and entertainment of Detroit, the Motor City. To automobile fans, the collections of cars of all makes should be especially exciting. Greenfield Village, a collection of landmarks of actual buildings in which history has been made, is a pocket-sized America. Greenfield Village was the personal hobby of the late Henry Ford. With all the facilities available in a big lake-front city like Detroit, all the family can find things to do to make a visit thoroughly enjoyable.

Business Sessions

Do not forget the AVMA business meeting. It is here that many important decisions concerning our profession will be made. All attending members are invited to watch the House of Delegates in action and to cast their vote for AVMA president-elect. For those who can spare the time to attend the various reference committee sessions prior to the scientific meeting, there is much to be learned about relationships of the profession with allied organizations, hip dysplasia, hog cholera eradication, hospital-surgical insurance for small animals, problems concerning foreign veterinary graduates, veterinary specialty groups, proposed dues increases, disposition of research funds, powers of delegates, methods of electing presidents, plus many other membership matters.

Probably no finer facility exists in the country for this convention than brand-new Cobo Hall, the world's largest and most modern exhibition building. The vast structure is completely air-conditioned and within easy walking distance of Detroit's principal hotels. Many scientific exhibits and 140 commercial exhibits, the largest number in AVMA convention history, will be displayed.

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1. Anderson, F. B.: Vet. Med. 54:535, 1959.

2. Lawson, K. F., et al.: Canad. J. Comp. Med. 22:164, 1958.

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History of the AVMA

In his presidential address at the 1915 meeting in Oakland, Calif., C. J. Marshall dealt largely with the foot-and-mouth disease epizootic which had been the cause for postponing the meeting of 1914. With praise for the work of the BAI, but with something less for that of the states, he charged: "Even a slight study of the diversified legislation scattered through the 48 states discloses the great ineptitude with which the problems have been approached. Powers grudgingly given, jealousy curtailed, ignorantly divided and weakened, spell a pall through the years of futility, ignorance and sordid greed . . . Let us urge upon the lawmakers in all of our states to recognize disease as a common foe to be fought with might and main—not singly, but in a hearty co-operation, if the years to come are to note any advance in the struggle."

The matter of incorporation of the Association, first broached in 1869 and dropped in 1872, was brought before the Association by a recommendation of the Executive Board. An objection to incorporation was raised by W. H. Hoskins, who although a good business man himself, thought this would make the Association vulnerable to being sued. R. P. Lyman, however, stated he had been sued as an individual on an Association matter, and felt this was an unfair obligation. N. S. Mayo pointed out: "The establishment of a journal is a business proposition requiring a definite business organization," and noted that incorporation would be necessary to collect outstanding bills and the like. The Association voted for incorporation, and this was accomplished under the laws of Illinois in 1916.

The report of the Committee on Diseases featured a symposium on hog cholera, an extensive report of the foot-and-mouth disease epizootic of 1914-1915, and a discussion of abortion in cattle.

In his report as chairman of the first Committee on History, D. Arthur Hughes noted: "At present the necessary historical materials are incomplete, scattered, inaccessible to the historical worker." Except for his untimely death the following year, Dr. Hughes would probably have become the profession's first historian. He recommended: ". . . that the office of historiographer and veterinary archivist be established." He also urged that veterinary history be taught in the schools.

In speaking on "A Publicity Policy for the Profession," F. F. Sheets urged establishment of a bureau for: ". . . placing fundamental veterinary truths before the public persistently, precluding the possibility of indifferent unprogressive men continuing to delude even part of the people as to what in reality constitutes the worth of modern veterinary services."

★ ★ ★

CLARENCE JAMES MARSHALL was born near Rome, Pa., March 13, 1864, and graduated from the University of Pennsylvania in 1894, whereupon he became house surgeon, later an assistant to Leonard Pearson, and in 1909 professor of theory and practice at his alma mater. Shortly after Dr. Pearson's death that year, Dr. Marshall succeeded his late friend as state veterinarian. Active in local, state, and national association work, he served as AVMA secretary (1910-1913), and in 1913 was elected AVMA president—the last man (except for one during World War II) to serve two terms in this office.



Dr. C. J. Marshall, AVMA secretary (1910-1913) and president (1913).

In 1916 he went to Europe to study the organization of the military veterinary service of the French and British Armies, and in 1917 was charged with drawing plans for the newly established Veterinary Corps. Commissioned a Major, he was appointed assistant director of the Corps, promoted to Lt. Col., and served to 1919. At the time of his death on Oct. 29, 1938, he had been a member of the teaching staff of the University of Pennsylvania for 42 years.



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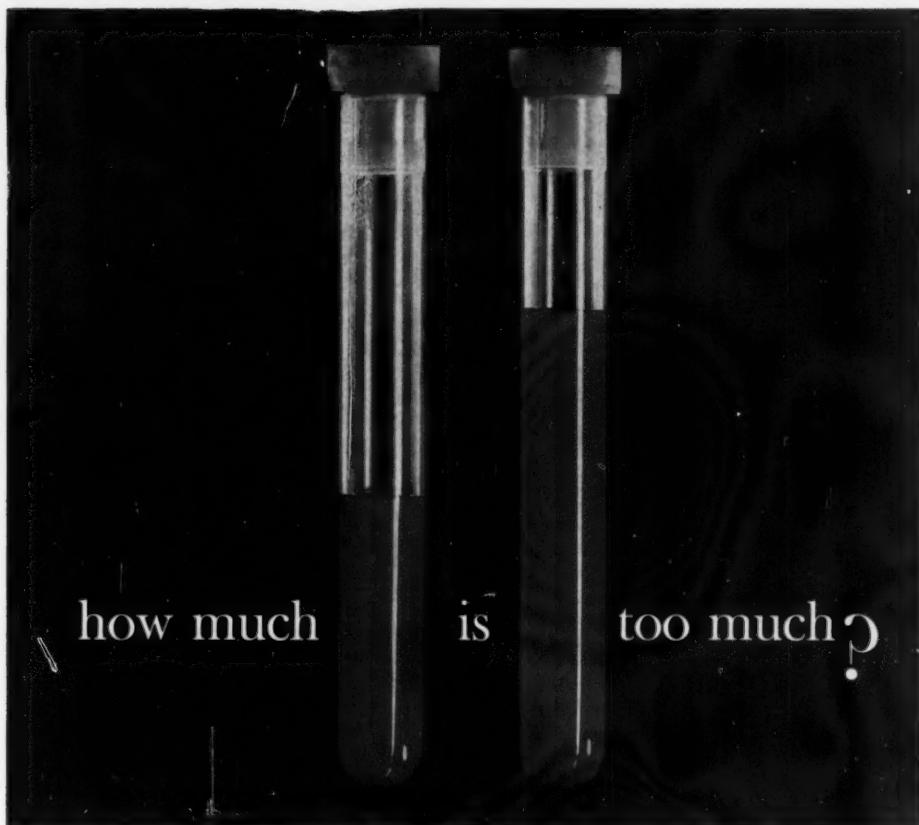


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P Public R Relations

Public Relations and the Principles of Veterinary Medical Ethics

Many veterinarians still believe that personal involvement in public relations may lead them into conflict with the profession's code of ethics. This concern, in which the word "publicity" looms large, is still a major roadblock in the path to successful veterinary public relations. It is reflected in frequent letters to the AVMA's central office seeking advice on how practicing veterinarians can avoid violation of veterinary medical ethics in communicating with the public.

What is the AVMA's "official" viewpoint on the compatibility of public relations and professional ethical conduct? Principally, the Association shares with all other health associations the conviction that today active participation in the affairs of society is considered a professional responsibility. Failure to discharge this responsibility could conceivably constitute a violation of professional ethics.

The AVMA has forcefully stated its view on the innate obligation of professional conduct. Section VI of the Principles of Veterinary Medical Ethics declares: "The responsibilities of the veterinary profession extend not only to the patient, but also to society. The health of the community as well as the patient deserves (the veterinarian's) interest and participation in non-professional activities and organizations."

Section VI is not merely an endorsement or approval of public relations or public information activities by veterinarians, individually and collectively. It is a clear-cut

definition of a professional obligation. No veterinarian will seriously argue its validity or its necessity. However, the argument starts when Section VI is evoked to evaluate the ethical implications of a veterinarian's public relations efforts. It is usually at this point that the AVMA is being asked to issue a rule or binding opinion applicable to the matter at stake.

Usually, the AVMA in its reply states that, first of all, the local or constituent association should consider and rule on the ethical merits or demerits of an individual case. The Association believes that specific problems concerning the application of the profession's ethical standards to public relations activities can normally be solved satisfactorily within the framework established by the interpretations of, and annotations to, Section VI, made by the AVMA's Committee of Ethics and the AVMA's Judicial Council.

For instance, in respect to press relations, the annotations to Section VI of the "Principles" state: "Members are encouraged to write articles for the local press announcing the presence of contagious diseases and their seasonal prevention or treatment, provided the motive is a bona fide attempt to salvage the livestock of clients, rather than personal gain. Wisely worded articles of this type add to the dignity and usefulness of the veterinary profession, whereas, paid advertisements of the same subject are manifestly detrimental and, therefore, are violations of this code."

On medium relations, generally, the Principles contain these directives: "All opinions on veterinary subjects which are communicated to the laity by any medium, whether it be a public meeting, the press, radio, or television, should be presented as from some organized and recognized veterinary medical society or association and not as from an individual veterinarian. Such opinions should represent what is the generally accepted opinion of the veterinary profession and should be presented as such. The presentation should not be for self aggrandizement nor act as a medium of advertising the individual practice of the veterinarian making the presentation."

On the subject of health columns: "Veterinarians taking charge of columns in which answers to correspondence on veterinary questions are printed in newspapers and magazines for the public are apt to

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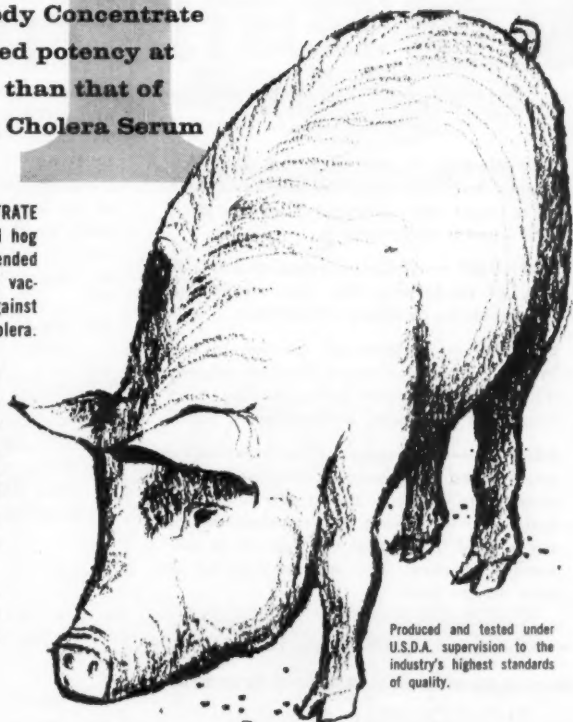
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cause serious ethical repercussions. Such columns should adhere strictly to making known facts which are the expression of veterinary science generally and not of the author of the column. Authors (writers) should avoid controversial subjects. These topics should be discussed in veterinary medical conventions and society meetings and made public only when organized veterinary medicine has decided upon a just solution."

Finally, on the subject of publications, the Principles advise that "the printing and dissemination of pamphlets, folders, and brochures which are given or mailed to clients should emanate from associations rather than individuals."

Section VI and its interpretations do not relieve veterinary associations on the state and local level of the necessity to design a workable code of public relations ethics meeting their particular requirements. They still leave to the membership the task of defining specific ethical procedures in such matters as press releases, health columns, by-lined articles, interviews, and statements given in times of emergency. They do, however, provide a framework and guidelines for undertaking such a task. Intimate familiarity with their content will aid AVMA members in maintaining a high level of ethical conduct in the pursuit of public recognition of the profession's accomplishments.

Copies of the "Principles of Veterinary Medical Ethics," 1960 edition, are available without charge from the AVMA.

H. R. Kuehn
Director, Public Information

Hog Cholera Research Funds

Of the total funds being spent on hog cholera research, the largest amount (\$108,300) is budgeted for research at the National Animal Disease Laboratory at Ames, Iowa, for study of the hog cholera virus, hog cholera vaccines, and work on a better diagnostic test for hog cholera. In addition, \$51,700 is budgeted for work in Suwanee County, Fla., where a study is in progress to determine the possibility of eradicating the disease through vaccination.—Nat. Hog Farmer (Jan., 1961): 10.

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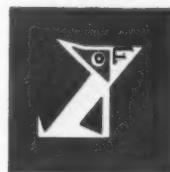
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This is a detailed street map of downtown Detroit, Michigan, showing the locations of seven numbered bus stops. The map includes major streets like Grand River, Washington Blvd., and Grand Circle, as well as landmarks like Cobo Hall and the Ford Auditorium. The bus stops are marked with numbered squares: 1 (Bagley), 2 (Cadillac Square), 3 (Fort), 4 (Michigan), 5 (Bagley), 6 (Adams), and 7 (Elizabeth).

Streets and Landmarks:

- Streets:** Grand River, Grand Circle, Madison, Broadway, Center, John, River, Farmer, Library, Gratiot, Randolph, Monroe, Cadillac Square, Congress, Washington, Larned, Jefferson, Atwater, Wayne, Grand River, Adams, Middle, Bagley, State, Times Place, Park, State, Michigan, Howard, Lafayette, Fort, First, Cass, Washington, Shelby, Griswold, Woodward, Larned, Jefferson, Atwater, Wayne, Grand River, Adams, Middle, Bagley, State, Times Place, Park, State, Michigan, Howard, Lafayette, Fort, First, Cass, Washington, Shelby, Griswold, Woodward, Larned, Jefferson, Atwater, Wayne.
- Landmarks:** Cobo Hall, Ford Auditorium, Civic Center Drive.

Bus Stops:

1. Bagley
2. Cadillac Square
3. Fort
4. Michigan
5. Bagley
6. Adams
7. Elizabeth

ANNUAL MEETING HOTEL RESERVATION REQUEST

American Veterinary Medical Association

Detroit, Michigan - August 20-24, 1961

INSTRUCTIONS AND INFORMATION

Please give ALL of the information requested below and mail this form to the Detroit Convention and Tourist Bureau. All reservations must be cleared through the Housing Bureau.

Blocs of rooms have been allocated for our use in the hotels which are listed. The Housing Bureau must have the names of all the persons who will occupy each room. No bloc reservations will be made.

Placement will be made in the order received. Your choice of hotels will be followed if rooms are available. Otherwise, assignment will be made to best possible advantage elsewhere. You will receive a confirmation directly from the hotel. (NOTE: All rates are subject to change.) If you desire accommodations in a Detroit hotel not listed or a motel, please so indicate. The Housing Bureau will try to place you there.

FAMILY PLAN — The hotels listed offer a "family plan" whereby children under 14 years of age will be accommodated in the same room with their parents at no extra charge. If more than one room is required to accommodate children, the hotel will charge only the single rate for each additional room.

ANNUAL MEETING HOTELS

Hotel	Singles	For Two Persons		Suites	
		Doubles	Twins	1 Bedroom	2 Bedrooms
1 Detroit-Leland	\$7.50-13.50	\$10.50-16.00	\$12.00-19.00	\$25.00-35.00	\$38.50-50.50
2 Henrose	6.50-10.50	9.00-13.50	12.50-16.00	25.00	45.00
3 Pick-Fort Shelby	6.00-12.75	9.00-15.50	10.50-16.25	23.00-43.50	39.75-58.75
4 Sheraton-Cadillac (Headquarters Hotel)	8.50-18.00	14.25-20.50	14.85-23.00	29.00-37.50	46.00-56.00
5 Statler Hilton	7.00-13.50	12.50-17.00	14.00-24.50	38.00-44.00	59.50-97.00
6 Tullier	5.00- 9.00	9.00-12.00	10.50-15.00		
7 Wolverine	6.00- 9.00	8.50-10.00	11.00-18.50	25.00	35.00-45.00

APPLICATION FOR HOTEL ACCOMMODATIONS

MAIL TO: Housing Bureau, AVMA
Detroit Convention and Tourist Bureau
626 Book Building
Detroit 26, Michigan

CHOICES OF HOTELS: 1st CHOICE: HOTEL _____ 2nd CHOICE: HOTEL _____

3rd CHOICE: HOTEL _____ 4th CHOICE: HOTEL _____

ACCOMMODATIONS DESIRED:

RATE DESIRED:

_____ Room(s) with one bed for one person (Single) \$ _____ to \$ _____

_____ Room(s) with twin beds for two persons (Twin) \$ _____ to \$ _____

_____ Room(s) with one bed for two persons (Double) \$ _____ to \$ _____

_____ Suite(s) parlor and one bedroom \$ _____ to \$ _____

_____ Suite(s) parlor and two bedrooms \$ _____ to \$ _____

ARRIVAL TIME: Date _____ Hour _____ DEPARTURE TIME: Date _____ Hour _____

LIST NAMES OF ALL PERSONS WHO WILL OCCUPY EACH ROOM:

Name	Street Address	City and State
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

CONFIRM RESERVATION TO: NAME _____

NAME OF COMPANY _____

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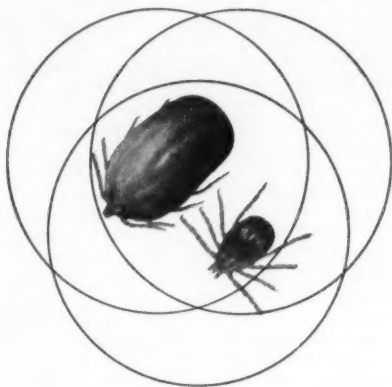


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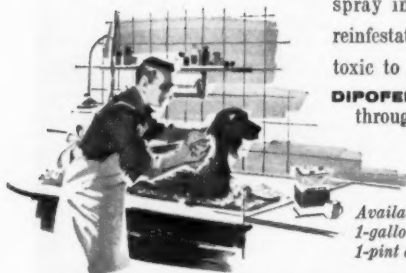
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JOURNAL of the AVMA

1) **Exclusive Publication:** Articles submitted for publication in the JOURNAL of the AVMA are accepted with the understanding that they are not being offered for publication elsewhere.

2) **Manuscripts,** including footnotes, references, tables, and legends, must be typewritten, double-spaced, on 8½- by 11-inch bond paper, and the original and one carbon copy should be submitted. One-inch margins should be allowed on the sides with 2-inch margins at the top and bottom. Articles should be concise.

Purpose of the article should be stated in the introduction. Summary should be included.

3) **References** to published works should be brief and limited strictly to what is relevant to satisfactory exposition of the author's own work. Reference names are not permitted in the text of the article. Persons cited are to be referred to by superscript numbers only, relating to the reference list at the end of the article.

References should be typed double-space, in alphabetical order by author, as follows: author(s), title, periodical name, volume, year, and page(s).
*Manson, J., and Obel, N.: The Technique of Adrenalectomy in the Ruminant. Cornell Vet., 48, (1958): 197-201.

When books are cited, name of publisher, location, edition, year of publication, and pages concerned should be given.

¹Arey, L. B.: Developmental Anatomy, 5th ed. W. B. Saunders Co., Philadelphia, Pa. (1946): 236-240.

4) **Tradenames** of products are avoided in the text of the article. Use only generic or chemical names. The tradename may be included in a footnote along with name and location of producer (composition of product may be included if necessary): e.g., "... piperazine citrate* . . ." Footnote: *Piperol, Carson Chemicals, New Castle, Ind.

5) **Arabic numerals** should be used wherever digits are needed throughout the article except at the beginning of a sentence.

6) **Abbreviations** for weights and measures as given in standard dictionaries are usually acceptable, but some are determined by AVMA editorial preferences: e.g., Gm., gr., kg., cc., mg., cmm., Gm./kg., µg., mg./100 ml. Other abbreviations should be explained the first time they are mentioned either in parentheses or footnotes: e.g., "... pregnant mare's serum gonadotrophin (PMSG). . ."

7) **Photographs** should be furnished in glossy prints. Identifying arrows, letters, etc. within photographs should be clearly defined. All illustrations should bear the author's name, illustration number, and "top" side indication.

8) **Drawings, graphs, and charts** should be clear and large enough to allow for possible reduction in size. A glossy print should be submitted if possible.

9) **Tables** should be simple and typed double-space. Complex tables are not acceptable. Complex material should be summarized rather than tabulated.

10) **Legends** should be typed double-space on a separate sheet.

Sufficient information should be included to allow the illustration to be understood without reference to the text.

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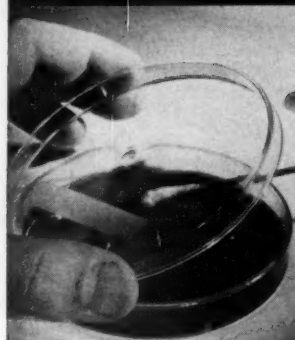


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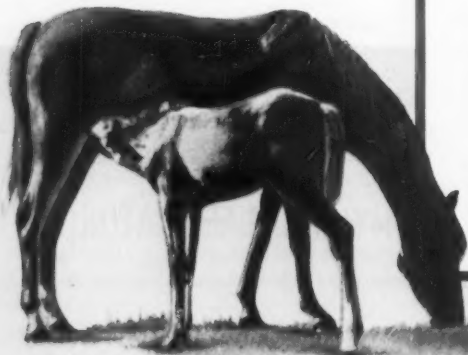
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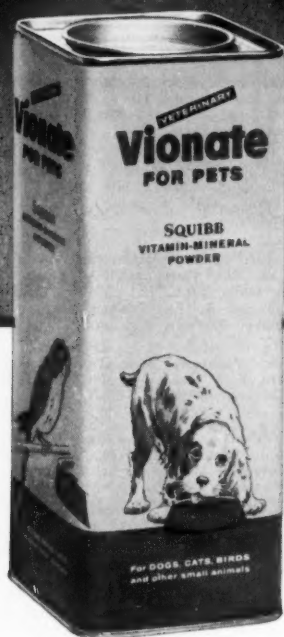


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Coming Meetings

Notices of coming meetings must be received 30 days before date of publication.

August, 1961

International Association of Milk and Food Sanitarians. Golden anniversary meeting. Wanderer Resort Motel, Jekyll Island, Ga., Aug. 14-17, 1961. T. L. Jones, Room 512, 1145 Nineteenth St., N.W., Washington 6, D.C.

American Association of Veterinary Bacteriologists. Annual meeting. Department of Microbiology and Public Health, College of Veterinary Medicine, Michigan State University, East Lansing, Mich., Aug. 18-19, 1961. C. H. Cunningham, Department of Microbiology and Public Health, College of Veterinary Medicine, Michigan State University, East Lansing, secretary.

American Veterinary Medical Association. Ninety-eighth annual meeting. Sheraton-Cadillac Hotel, Detroit, Mich., Aug. 20-24, 1961. Dr. H. E. Kingman, Jr., 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

Electron Microscope Society of America. 19th annual meeting. Pittsburgh Hilton Hotel, Pittsburgh, Pa., Aug. 23-26, 1961. Dr. A. R. Taylor, Research Division, Parke, Davis and Co., Detroit 32, Mich., program chairman.

Washington State Veterinary Medical Association. Annual meeting. Chinook Hotel, Yakima, Wash., Aug. 28-29, 1961. Mr. Robert M. Ford, 2406 Boyer Ave., Seattle 2, Wash., executive secretary.

International Association of Microbiological Societies. Seventh International Congress of the Permanent Section on Biological Standardization. London, England, Aug. 28 to Sept. 1, 1961. E. C. Hulse, Ministry of Agriculture, Central Veterinary Laboratory, Weybridge, Surrey, secretary of organizing committee.

September, 1961

Canadian Veterinary Medical Association. 13th annual convention. Banff Springs Hotel, Banff, Alta., Sept. 8-11, 1961. Dr. A. E. Lewis, 403 Public Building, Calgary, Alberta, Canada.

New Mexico Veterinary Medical Association. Alvarado Hotel, Albuquerque, N.M., Sept. 11-12, 1961. Dr. E. Leonard Payne, 1235 Wyoming, N.E., Albuquerque, N.M., secretary.

Robert A. Taft Sanitary Engineering Center. Training Program on Milk Pasteurization Controls and Tests. Cincinnati, Ohio, Sept. 12-14, 1961. Chief, Training Program, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Parkway, Cincinnati 26, Ohio.

South Dakota Veterinary Medical Association. Annual meeting. Huron, S. Dak., Sept. 14-15, 1961. Dr. Homer K. Caley, Webster, S. Dak., secretary.

Animal Care Panel. 12th annual meeting. Statler Hilton Hotel, Boston, Mass., Sept. 27-29, 1961. Dr. Bernard F. Trum, Sherborn, Mass., general chairman.

Oregon Veterinary Medical Association. Fall clinic meeting. Corvallis, Ore., Sept. 28-30, 1961. Dr. K. J. Peterson, Office of the Secretary, Poultry-Veterinary Building, Corvallis, Ore., program chairman.

October, 1961

New England Veterinary Medical Association. Annual meeting. Poland Springs Hotel, Poland Springs, Maine, Oct. 1-4, 1961. Dr. C. Lawrence Blakely, 180 Longwood Ave., Boston, Mass., secretary.

New York State Veterinary Medical Society. 70th annual meeting. Saranac Inn, New York, Oct. 3-7, 1961. Dr. C. D. Ebertz, 84 Grant Ave., Auburn, N.Y., program chairman.

Purdue University. 49th annual conference for veterinarians. Purdue University, School of Veterinary Science and Medicine, Lafayette, Ind., Oct. 5-7, 1961. Dr. Erskine V. Morse, Purdue University, School of Veterinary Science and Medicine, Lafayette, Ind., dean.

Symposium on Recent Developments in Research Methods and Instrumentation. 11th annual instrument symposium and research equipment exhibit. National Institutes of Health, Bethesda 14, Md., Oct. 9-12, 1961. Mr. James B. Davis, National Institutes of Health, Bethesda 14, Md., executive secretary.

Eastern Iowa Veterinary Association. Annual meeting. Sheraton Montrose Hotel, Cedar Rapids, Iowa, Oct. 12-13, 1961. Dr. William R. Goodwin, Newhall, Iowa, secretary.

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Illinois Veterinary Medical Conference and Short Course. University of Illinois, Urbana, Oct. 19-20, 1961. Dean C. A. Brandly, College of Veterinary Medicine, University of Illinois, Urbana, Ill.

Gaines Symposium. University of Illinois, Urbana, Ill., Oct. 20, 1961. Mr. Harry Miller, Gaines Dog Research Center, 250 Park Ave., New York 17, N.Y., director of the Dog Research Center.

Midwest Feed Manufacturers' Association. Centennial Nutrition conference, Kansas City, Mo., Oct. 21-23, 1961. Fennell-Gibson Public Relations, 2201 Grand Ave., Kansas City, Mo.

Southern Veterinary Medical Association. Annual meeting, Thomas Jefferson Hotel, Birmingham, Ala., Oct. 22-25, 1961. Dr. A. A. Husman, Box 91, Raleigh, N.C., secretary.

California Veterinary Medical Association. Annual meeting, Long Beach, Calif., Oct. 23-25, 1961. Mr. Kenneth Humphreys, 3004 Sixteenth St., Rooms 301-303, San Francisco 3, Calif., executive secretary.

Missouri, University of. 37th annual veterinary conference, Columbia, Mo., Oct. 30-31, 1961. Dr. Cecil Elder, Department of Veterinary Pathology, School of Veterinary Medicine, University of Missouri, Columbia, Mo., chairman.

United States Livestock Sanitary Association. Curtis Hotel, Minneapolis, Minn., Oct. 30-Nov. 3, 1961. Dr. R. Hendershott, 33 Oak Lane, Trenton, N.J., secretary.

Veterinary Laboratory Diagnosticians. 4th annual meeting, Curtis Hotel, Minneapolis, Minn., Oct. 30-31, 1961. Dr. E. Pope, 4922 Holiday Dr., Madison 5, Wis., secretary.

National Assembly Chief Livestock Sanitary Officials. Curtis Hotel, Minneapolis, Minn., Oct. 30-31, 1961. Dr. M. N. Riemenschneider, 122 State Capitol, Oklahoma City, Okla., secretary.

National Association of Federal Veterinarians. Annual meeting, Curtis Hotel, Minneapolis, Minn., Oct. 31, 1961. Dr. F. L. Herchenroeder, Box 3085, Parkfairfax Station, Alexandria, Va., secretary.

November, 1961

Mississippi Valley Veterinary Medical Association. Hotel Pere Marquette, Peoria, Ill., Nov. 1-2, 1961. Dr. R. C. Williams, 3721 Fifth Ave., Moline, Ill., secretary.

Michigan Nucleonic Society. Detroit, Mich., Nov. 10, 1961. Dr. L. E. Preuss, Department of Physics, Edsel B. Ford Institute for Medical Research, Henry Ford Hospital, Detroit 2, Mich., chairman.

American Public Health Association. 89th annual meeting, Cubo Hall, Detroit, Mich., Nov. 13-17, 1961. Dr. Berwyn F. Mattison, American Public Health Association, 1790 Broadway, New York 19, N.Y., executive director.

Foreign Meetings

7th International Congress of Biological Standardization. Permanent Section of Biological Standardization of the International Association of Microbiological Societies. Wellcome Foundation Ltd., the Wellcome Building, Euston Rd., London N.W. 1, England. E. C. Hulsa, Ministry of Agriculture, Central Veterinary Laboratory, Weybridge, Surrey, secretary of organizing committee, Aug. 28-Sept. 1, 1961.

Twelfth World's Poultry Congress. Show Grounds of the New South Wales Royal Agricultural Society, Sydney, Australia, Aug. 13-18, 1962. Dr. Cliff D. Carpenter, chairman, U.S. Participation Committee, 1207 Emerald Bay, Laguna Beach, Calif.; Dr. A. William Jasper, secretary, c/o AFBF, 2300 Merchandise Mart, Chicago 54, Ill.



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Wanted—California-licensed veterinarian for small animal hospital in southern California. Starting salary for experienced man—\$800 per month. Definite raises or percentage for right man. Salary and future for recent graduate would be arranged at interview. Address Box G 74, JOURNAL of the AVMA.

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Wanted—assistant veterinarian for small animal hospital in Maryland close to Washington, D. C. Good salary and best working conditions. Start August 20 to September 1. Address Box G 9, JOURNAL of the AVMA.

Wanted—assistant veterinarian for northern New England general practice. Opportunity for future interest in practice. State personal data and salary required in first letter. Address Box G 1, JOURNAL of the AVMA.

Wanted—licensed veterinarian for staff of completely-equipped modern, AAHA small animal hospital in New York City suburb. Complete details in first letter. Address Box D 56, JOURNAL of the AVMA.

Wanted—Positions

Veterinarian experienced in general and small animal practices desires position while building new hospital. Available in September-October. Accept position for portion or all of time. Licensed in California, Washington, Idaho, Nevada. Address Box H 7, JOURNAL of the AVMA.

Veterinarian seeks regular part-time position on evenings and weekends in the Baltimore-Washington area. Small animal experience. Available immediately. Address Box H 2, JOURNAL of the AVMA.

Experienced graduate (OSU '59), married, age 27, desires position in mixed practice leading to partnership. Prefer dairy and small animal. Desire Ohio, Indiana, or Southern Michigan. Address Box G 86, JOURNAL of the AVMA.

Middle-aged veterinarian seeks position or assistantship. Southwest or western area preferred. Experienced in large animals and clinical pathology. Address Box G 81, JOURNAL of the AVMA.

Experienced practitioner desires vacation position in progressive small animal hospital leading to partnership or purchase. Address Box G 69, JOURNAL of the AVMA.

Graduate (OSU '49) with varied experience desires position. Accredited veterinary pathologist, teaching and research at veterinary school, 4 years' administration and research in laboratory animal diseases in prominent cancer research institute; practiced 7 years in own AAHA hospital; 1 year business experience as vice-president of own corporation. Age 39. Address Box G 67, JOURNAL of the AVMA.

For Sale or Lease—Practices

For sale or lease—established veterinary practice grossing \$25,000 per year. Four acres of land in city limits of Madisonville, Ky.; 5-room clinic with 15 large kennels, brick construction. Adjoining modern 3-bedroom house with 2 full baths. Priced less than established real estate value. Contact Douglas E. Oates, Kentucky Bank Building, Madisonville, Ky.

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For sale or lease—lucrative general practice in Idaho. Modern equipment and facilities. Would consider employment of well-qualified, industrious veterinarian on a percentage basis. Address Dr. Virgil L. Pennel, Midway Veterinary Clinic, Route 3, Caldwell, Idaho.

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For lease with option to buy—ideal location for veterinarian on busy highway in northern New Jersey, now operated as successful kennel. Will continue operation and build to suit. Address Box G 89, JOURNAL of the AVMA.

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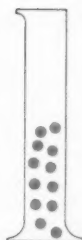
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1. Newberne, J. W., et al.: Recent Studies on the Properties of a Nonvirulent Living Hog Cholera Vaccine, 62nd Annual Proceedings, U. S. Livestock Sanitary Association, 1958, pages 278-289.

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Clinical and Research References:

1. Sinha, S. K., et al, Studies on Canine Distemper Immunization with a Tissue Culture Vaccine. *Vet. Med.*, Vol. 55, No. 4, April 1960.
2. Burgher, J. A., et al, The Immune Response of Dogs to Distemper. *Cornell Vet.*, Vol. 48, No. 2, 1958.
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